Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

All communications should be addressed to the New York Office, 30 Church Street

EDWARD A. SIMMONS, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
HENRY LEE, *Vice-Pres.*
SAMUEL O. DUNN, *Vice-Pres.*
CECIL R. MILLS, *Vice-Pres.*
FREDERICK H. THOMPSON, *Vice-Pres.*
ROY V. WRIGHT, *Sec'y.*
JOHN T. DEMOTT, *Treas.*

CHICAGO:
105 West Adams St.

WASHINGTON:
17th and H Streets, N. W.

CLEVELAND:
Terminal Tower

SAN FRANCISCO:
215 Market St.

Editorial Staff

SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*
H. F. LANE, *Washington Editor*

B. B. ADAMS
C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. C. AUGUR
R. A. DOSTER
JOHN C. EMERY
MARION B. RICHARDSON
H. C. WILCOX
NEAL D. HOWARD
RICHARD W. BECKMAN
LLOYD GEORGE
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
GARDNER C. HUDSON
M. H. DICK
W. J. HARGEST

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

Vol. 88 May 31, 1930 No. 22

In this Issue

Is Our Present Roadbed Construction Ideal? ..... Page 1308

Paul Chipman, office engineer of the Pere Marquette, analyzes roadbed requirements and describes the sections of concrete roadbed now in experimental use on his road.

Reducing Railway Material Handling Costs 1313

A description, by J. V. Miller, assistant general storekeeper of the C., M., St. P. & P., of how auto trucks, tractors and lift equipment open a big field of operating savings.

Rock Island Extends Use of Tabulating Machines 1315

W. L. Linnehan, assistant auditor car service accounts, C., R. I. & P. tells how increased use of such machines has saved labor, reduced discrepancies in per diem accounting and simplified passenger car and caboose records.

EDITORIALS

Declining Growth of Railway Freight Traffic 1305
Rail vs. Road in Germany 1306
The Public Relations View of Claim Agency 1307

GENERAL ARTICLES

Is Our Present Roadbed Construction Ideal? By Paul Chipman 1308
Modern Maintenance Methods Discussed by Boiler Makers 1311
Reducing Railway Material Handling Costs, by J. V. Miller 1313
Freight Car Loading 1314
Rock Island Extends Use of Tabulating Machines, by W. L. Linnehan 1315
Claim Men Seen at Richmond as Ambassadors of Good Will 1318
Accident Statistics Analyzed 1322
Sixty-Five Foot Gondola Cars for the Bessemer 1323
Electric Pusher Locomotives Operated on Great Northern, by G. E. Baston 1324
Union Pacific Athletics Developed Through Clubs 1325
Message Traffic Handled by Printers on Pennsylvania 1328
Optimism Prevails as Tide Turns for British Railways, by W. H. Fraser, M. Inst. T. 1329
Pennsylvania Clayton Act Hearing 1332
Short Line Railroad Has Operating Ratio of 57.5 1334
Interviewing Prospective Employees, by Hal. S. Ray 1335
Couzens Resolution in House Committee 1336
Accident Investigations During September 1337

LOOKING BACKWARD 1338
NEW BOOKS 1339
ODDS AND ENDS OF RAILROADING 1340
NEWS OF THE WEEK 1341

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

ONE OF THE TWO BATTERY LOCOMOTIVES *used by the Twin Branch Railroad for switching loaded coal cars. An Exide-Ironclad Battery supplies the power.*

Self-Propelled Battery Locomotives

Cut Switching Time *and* Costs

THESE locomotives run wherever there's a track. No third rail or overhead trolley construction is required. And the Twin Branch Railroad finds that these self-propelled Exide-Ironclad-equipped units reduce haulage costs—save switching time.

You too can save money . . . eliminate expensive track electrification . . . make switching operations far more flexible . . . with clean, efficient storage battery locomotives. Furthermore, this type of motive unit gives eight important assets to your switching service:

(1) Clean and silent operation. (2) No smoke, sparks or fumes, allowing use in buildings. (3) Few moving parts, reducing maintenance costs. (4) Consumes power only when in operation. (5) Large momentary overload capacity. (6) Ready for use at all times. (7) Perfect, simple system of control. (8) Is operated safely and efficiently by one man.

Exide-Ironclad Batteries are constructed for this type of work. They are specially designed to meet every demand for power with a surge of unfailing current. Actual service has established beyond question the long, active life, dependability, and economy of Exide-Ironclad Batteries in hard switching service.

We shall be glad to tell you, upon request, what the Exide-Ironclad-equipped locomotives are doing for other railroads and large industrial organizations. Write today. No obligation.

HEAD COVERS REMOVED *to show arrangement of the 120 Exide-Ironclad Battery cells in this self-propelled switching locomotive.*

Exide
IRONCLAD
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE
Exide Batteries of Canada, Limited, Toronto

Railway Age

Vol. 88, No. 22 May 31, 1930 Table of Contents Appears on Page 5 of Advertising Section

Declining Growth of Railway Freight Traffic

THE facts regarding the changes that are occurring in railway traffic challenge the attention of business men and government authorities, as well as of railway officers and employees. It is well known that since 1920 the railways have lost one-third of their passenger business. An equally important fact which is not well known is that, since 1920, there has been an unprecedented decline in the growth of railway freight business. The Interstate Commerce Commission recently has issued a report giving the tonnage of the various classes of commodities handled by the railways in 1929. Last year's freight business was the largest in history. When, however, the growth between 1920 and 1929 of the freight traffic handled by the railways is compared with its growth in earlier periods, it is found that there are occurring changes in railway freight business almost as revolutionary as the changes that are occurring in railway passenger business.

The total amount of freight service rendered depends, first, upon the "number of tons originated"—the actual number of tons handled—and, secondly, upon the average distance each ton moves. The commission's statistics regarding "tons originated" begin with the year 1899. In the ten years ending with 1910 the increase in tons originated was 73 per cent, or about 43,000,000 tons annually. In the ten years ending with 1920 the increase was about 22 per cent, or approximately 23,000,000 tons annually. In the nine years ending with 1929 the increase was only about 6½ per cent, or 9,100,000 tons annually. Thus it will be seen that not only has the percentage of increase greatly declined, but that the average annual increase in tonnage during the last nine years was less than one-half as great as in the preceding decade, and only a little more than one-fifth as great as in the decade ending with 1910.

Increase of Ton-Mileage Declines Two-Thirds

Even more striking are comparative figures regarding the growth of ton-mileage, which reflect both the changes in the number of tons handled and the changes in the average distance they are carried. The commission's statistics of tons carried one mile are available from 1890 to 1929. The average annual increase in ton-mileage in the ten years ending with 1900 was 6½ billion; in the ten years ending with 1910, 11½ billion; in the ten years ending with 1920, almost 16 billion; and in the nine years ending with 1929, only 4 billion. The average annual increase during the last nine years was only about one-fourth as great as in the decade ending with 1920. Doubtless in the decade ending with 1920 freight business was abnormally stimulated by the great war, but the figures show that the average annual increase in ton-mileage during the last nine years was only one-third as great as during the entire 30 years from 1890 to 1920; only about one-third as great as in the decade ending with 1910; and only two-thirds as great as during the decade ending with 1900, in which occurred the panic of 1893 and a subsequent business depression.

Excepting during the depression in 1921, the period from 1920 to the stock market collapse of 1929 constantly has been described as one of rapidly expanding industry and commerce and great prosperity in this country. If it actually was such a period, why did railway freight business increase much less rapidly than during any other equal period within the entire 40 years that complete railway statistics have been compiled and published? Some persons, and especially enthusiastic advocates of waterway development, anticipate an expansion of industry and commerce in future which will necessitate an expansion of transportation facilities such as the railways needed to make prior to a decade ago. Those who make these predictions seem either not to know or to ignore the facts regarding the trend of railway freight business during the last decade.

It is impossible even for those who have given the most study to the subject fully to explain the great decline in the growth of railway freight business since 1920. It is attributable to various causes, including increased competition from carriers on the highways and waterways; increased efficiency in the use of coal; relative decline in the production of raw materials and increase in the production of manufactured goods; decentralization of industry and commerce; the supplanting of lumber by cement; the transportation of

oil by pipe lines instead of by rail; restriction of immigration, and so on. Whether there has been a decline in the growth of the total tonnage produced and transported in the country, or merely a decline in the growth of the tonnage transported by railroads and a corresponding increase in the tonnage transported by other means, it is impossible to say, but apparently the increase in tonnage produced has slowed down.

Effect of Tendency on Transportation Costs

Is this tendency going to continue to prevail? As it has prevailed for a decade, it is hard to believe it will not continue to prevail unless the influences determining the growth of railway traffic change. If the increase of railway traffic is going to be much smaller in future than formerly this must greatly affect the policies of railway managements, and also the transportation policies of the government, if the nation is to have efficient railway service.

Almost throughout the history of railroading in this country the investment of large amounts of capital in railroads has been required both to increase capacity and to effect operating economies. Apparently in future the bulk of the investment made in railways will have to be made to improve service and effect economies; and the investment and effort required to reduce the cost of hauling any given number of tons one mile will be much greater than heretofore, for the more traffic a railway handles the more cheaply, other things being equal, it can handle each unit of it. The rapid growth of traffic formerly was the principal thing that enabled the railways to reduce rates or stand increases in wages, taxes and other unit costs without advancing rates. If traffic is going to grow much more slowly in future than formerly the ability of the railways to reduce rates during periods when unit costs do not increase, or to avoid increasing rates when wages, taxes and other unit costs do increase, will be greatly lessened.

The recent trend of railway freight business raises certain rather obvious questions regarding government policies. The passenger earnings of the railways are now about $450,000,000 less annually than ten years ago. This is principally due to the competition of motor vehicles on highways built at public expense. It is now proposed to develop an extensive system of inland waterways for the purpose of "cheapening transportation" and "relieving" the railways. In the face of the fact that the growth of railway freight business in the last decade has been only one-third annually as great as during the preceding 30 years, and that the railways now have a large surplus capacity, it is contended that they cannot be expanded enough to cope with the growth of traffic, and that the growth of traffic in future will be sufficient to provide ample business for both the railways and an extensive system of new inland waterways. Experience prior to 1920 seemed to support such claims. The experience of the last ten years gives them no support whatever, but indicates that those who make them do not consider it necessary to base their reasoning and conclusions upon facts.

Future Investment in Means of Transportation

The railways have no vested right to handle all, or, indeed, any part of the country's traffic. The traffic belongs to the public and not to the railways. The public welfare demands that each part of the traffic shall be handled by that means which can handle it most cheaply in proportion to the character of the service rendered. In intelligently considering the economics of the country's transportation problem, however, the fact cannot be disregarded that additional facilities of transportation can be provided only by additional investment of capital by the government, by private enterprise, or by both, and that the unwise investment of capital, whether by the government or private enterprise, will result in waste which ultimately will be borne by the public. Whether the additional capital will be wisely or unwisely invested will depend upon whether its investment helps to cause the entire transportation service of the country—by rail, water, highway and air—to be rendered at the lowest cost practicable in proportion to the character of the service.

The experience of the last ten years indicates that there are occurring economic changes which are making unnecessary as great expansion of means of transportation for handling freight, and as large investments of capital for that purpose, as formerly were necessary. Will the entire cost of handling the country's freight business in future be made less by causing a sufficient additional investment to be made in the railways to enable them satisfactorily to handle all the traffic that normally would come to them, or by having the government make large investments in other means of transportation, thereby further diminishing the already diminishing growth of railway freight traffic and correspondingly reducing the investment that otherwise would be made in the expansion of the railways?

This is an economic question of great importance. It may prove very unfortunate for the public that it is being wholly ignored by those business men and public men who are most influential in shaping public sentiment regarding transportation problems.

Rail vs. Road in Germany

IT is still too soon to say what concrete results may follow the discussion, at the Madrid meeting of the International Railway Congress earlier this month, of the important question of highway competition for railway traffic, but it is interesting to note that at least one of the reports submitted on this topic does not hesitate to suggest ways and means of meeting such competition, both by improvement of rail service and extension of rail-highway services.

Writing for the Congress of conditions in his own country, Dr. Zietzschmann, of the headquarters staff of the German State Railways, first describes the growth and present status of German highway services, and then concludes: "The development, to date, of motor coach traffic has tended more in the direction of producing an injurious division of traffic, rather than in providing a useful addition to the existing railway network . . . . . In passenger traffic (for the year 1928) there was at least a loss of between 140 million and 150 million Reichsmarks (approximately $34,500,000). . . . . In freight traffic, the net loss for 1928 would appear to have amounted to at least 180 million Reichsmarks ($42,000,000)."

Farther along in his report, Dr. Zietzschmann considers in some detail methods by which the German railways may meet, or as he says, prevent, such competition. "Since it is impossible to divide the traffic so long as railways are subject to differential treatment in law," his study continues, "it will first be necessary to abolish the legal privileges which the motor vehicle at present enjoys. The motor vehicle must be debited with its just proportion of the cost of road construction and maintenance and also a proper share of the cost of traffic police. Further, liability (for damages arising from accidents) in both types of traffic must be equalized. As regards passenger traffic, the most important means for the railways to retain their traffic in the face of motor vehicle competition are improvement of the railway services by more frequent trains, cutting down the running times and increasing the comfort of passengers. The development of excursion and week-end traffic will help to retain and extend the business of the railway. For freight traffic, apart from alterations in tariffs, improvement and simplification in despatch and forwarding systems are announced with a view to meeting competition."

Over and above improvement of rail service, Dr. Zietzschmann recognizes the possibility of creating rail-operated highway services, in the following sentences: "Motor services run by the railways will serve to avert motor competition threatened from other directions. A motor vehicle service may not only be considered as a connection with branch lines but under certain circumstances with the taking over of a part of a main line service. Such a service, however, should materially increase railway traffic by serving places distant from the railway, or supplement existing rail service in a more efficient manner than could be achieved by running more trains. Provided such services are limited to those which can be worked from railway bases without heavy staff costs, it is cheaper for the Reichsbahn (state railway) to run them itself, than to have them run by other undertakings."

Admittedly, German conditions, with their relatively short hauls and extremely dense traffic, are somewhat different from those found in many parts of this country. Yet they are not so entirely at variance that it is impossible to learn by a study of the experience of German railroads, so ably set forth in Dr. Zietzschmann's detailed report; while it is both interesting and satisfactory to realize that the difficulties, the problems and the solutions attempted in Germany are so similar to those upon which American railroads are also working.

The Public Relations View of Claim Agency

MANY of the topics presented for discussion at the recent meeting of the Association of Railway Claim Agents were, naturally enough, highly technical and of interest chiefly to members of the association itself. There was one, however, which should be of general interest to the entire railroad world, especially in view of the strenuous efforts made to cultivate friendly public relations during the last decade. We refer to the paper prepared by G. M. Crowson of the Illinois Central on the subject of the claim agent as an ambassador of good will, which is quoted at some length in the report of the convention appearing elsewhere in this issue.

As pointed out by W. L. Stanley of the Seaboard Air Line in his discussion of Mr. Crowson's paper, it may, at first glance, appear impossible for a claim agent to act as an ambassador of good will or a promoter of a cordial public attitude. The very nature of his work, the very conditions under which he meets the public, seem to militate against such a result.

Yet, as both men indicated, closer examination shows that it is at such times, when some cause for antagonism, just or unjust, has arisen, when normally friendly relations are strained to the breaking point, that the claim agent steps in. It is then that by diligent exercise of tact, courtesy and, above all, fairness, he may retain or restore a friendly attitude; may prevent a permanent feeling of hostility on the part of the claimant toward the agent's own railroad and possibly toward all railroads.

This conception of the value of claim agency, relatively new as it is, represents a marked advance from the time when claim departments were looked upon as necessary evils. But it is, none the less, important as an additional means of fostering the friendly public attitude which railroads have come to recognize as so valuable to them. It is highly essential that claim men should see themselves in this new light, and should come to regard themselves as guardians of the railroad's good will, as well as of its treasury. It is no less essential that men in other railroad departments should take the same view, not so much, perhaps, with the idea of raising the now well-recognized importance of claims work, as of aiding claim adjusters, wherever possible, in the more efficient performance of this new duty.

Two Views of the Concrete Track on the Pere Marquette

Is Our Present Roadbed Construction Ideal?*

Search for most efficient design leads to installation of reinforced concrete slabs as support for rail

By Paul Chipman

Office Engineer, Pere Marquette, Detroit, Mich.

DISCONTENT is the mother of progress and the first step toward the advancement of any art is a lively sense of its present imperfection. The pioneers in railroad construction developed a type of track so well adapted to the conditions which then and for long afterwards prevailed that it is still in universal use. But on heavy traffic roads the requirements have become so severe that this type of track is no longer ideal. Its shortcomings have been realized, but efforts to overcome them have been directed toward improving the several elements of the old combination instead of seeking a new one.

The Ideal Roadbed Defined

Let us consider briefly the requirements for a roadbed that is ideal from the standpoint of both the railroad and its patrons. The latter demand safety, comfort and speed for passengers and more and more they are demanding speed for freight. From the railroad's point of view, the ideal track would not only afford all the advantages demanded by its patrons, but would also cost nothing to maintain. This ideal cannot be fully realized, but it will be approached if the wear and tear of the track structure can be restricted to the rails.

To restrict the ravages of use and time on the rail calls for certain characteristics in the rail support. It must, of course, be strong enough to perform its duties and it must be durable. Of the three materials available, wood, steel and reinforced concrete, the last is not only the most durable, but also the lowest in first cost and in cost of maintenance. In addition to the general requirements of strength and durability, the roadbed which would reduce maintenance cost to a minimum must have certain characteristics of design, of which three are of outstanding importance.

First: The load must be distributed over a large area of the subgrade. This is but imperfectly accomplished by the present type of track, owing to its lack of continuity. The passing axle load is concentrated on one, two or three ties at a time. If the ballast is deep enough, say 18 to 24 in. under the tie, a fairly uniform distribution is obtained by the time this pressure reaches the subgrade. But the ballast is itself com-

* Abstract of a paper presented before the Philadelphia Engineers' Club on April 22.

pressible under heavy loads and its particles shift their position, causing unequal settlement and consequent expense for surfacing. The upper portion becomes clogged with dust and cinders and the lower part becomes mixed with earth, so that fresh material must sooner or later be added. If the cost of track maintenance is to be reduced to a minimum, granular ballast must be replaced by a rigid continuous platform as a means of distributing the load to the earth subgrade.

Second: The rail must have a continuous support. In railroad track of the usual type the rail has two distinct functions. One is to take the wear of the wheels, which requires high compressive strength and hardness. The other is to support the wheel-load from tie to tie, which requires high tensile strength and toughness. These requirements are to a certain extent incompatible and from this incompatibility arises the great problem in rail making, which is to get a rail that is at once hard enough to withstand wear and strong and tough enough to resist with safety the high tensile stress to which it is subjected. If the rail can be given continuous support, it will be relieved of the second function and its chemical composition can be such as to secure the utmost in respect to wear-resistance. Furthermore, a much lighter section can be used. Less than 10 per cent of the rail section is devoted to main line wear and the remainder is required to carry the load.

A continuous rail support has other advantages. The rail wave is practically eliminated, thus doing away with wear of angle bars, loosening of bolts and other joint troubles which lead to no small part of the maintenance expense. Last, but not least, it eliminates the crosstie, the renewal of which constitutes one of the major items of expense in maintaining track. It is evident that a continuous support for the rail is one of the essential features of any track system which is to have the lowest possible cost of maintenance.

Third: Economical means for adjusting for surface must be provided. The bearing power of earth, whether in its natural state at the bottom of a cut or compacted in an embankment, is not uniform. A weight as great as that of a locomotive cannot be moved over a support which rests upon the earth, without causing settlement. This may be slight and quite uniform, but there will be certain places where it will sooner or later be necessary to raise the track in order to restore it to its original smoothness. These places may be few, but they are bound to occur, and the ideal roadbed must be capable of ready and economical adjustment for surface.

Other Requirements

In addition to these three essentials, there are certain other important features that are highly desirable, either from the maintenance point of view, or from the standpoint of the passenger. One of these is a means of attaching the rail securely to its support, which will readily permit a limited amount of lateral adjustment and easy removal and replacement. It is impossible to set a row of anchors in concrete in as straight a line as the trackman likes to lay his rail. In order to get perfect line, some lateral adjustment of the rail fastening is necessary. The arrangement of rail fastenings and reinforcing bars must also be such that there is no metallic contact whereby electric current can pass from one rail to the other, or from the rail to the ground.

In traveling over rails which rest directly on a rigid support, the passenger experiences a slight feeling of rigidity. Passenger cars are heavy and their springs are so strong that they do not respond to the minute jars that result from slight imperfections in the adjustment of the rail and wheel surfaces to each other. In the ordinary track, most of this infinitesimal vibration is taken up by the tie and ballast, but where the rail rests directly on a slab of concrete or a steel girder, it is transmitted through the springs to the observer. This is not a very serious matter at best, but is a fault which would be minimized in the ideal roadbed by the introduction of a thin cushion of some sort between the rail and its support.

Ordinary track would not be noisy if the joint clicks and the clatter of the tie plates could be eliminated; when the rail has a continuous support, there are no tie plates and joint clicks are practically eliminated. However, where the supporting structure has a wide, flat surface it acts as a reflector of the grinding of wheel on rail and the rattle of equipment, with more or less discomfort to the sensitive passenger. The ideal track support will not have a smooth flat top, although, like the feeling of rigidity referred to above, this sound is not a matter of serious discomfort. The two have an intimate psychological connection. Either alone would scarcely be noticed, but in combination they cannot escape observation.

Developments on the Pere Marquette

In November, 1926, the Pere Marquette built a test section of concrete roadbed near Detroit, Mich., on its westbound main track to Grand Rapids. It is a flat slab 21 in. thick and 10 ft. wide, reinforced with a light steel truss under each rail, in addition to longitudinal and transverse reinforcement of ordinary bars. It was cast in 39-ft. sections, of which there were 34, making the total length 1,326 ft. The joints between the slabs were of the tongue and groove type, so that no slab could settle independently of the one adjoining.

After watching this piece of roadbed for more than two years, some rather definite conclusions were formed as what the ideal track support should be and as to how this ideal might be attained. Therefore, in August and September, 1929, another section of improved design was built as an extension westward of the former installation. The new installation consists of 20 sections, each 19 ft. 6 in. long, or one-half the length of a rail, instead of a full rail length, as in the previous installation. The tongue and groove joint was retained and strengthened by reinforcement. The construction may be described as a platform 9 ft. wide and 6 in. thick, from which arises a girder under each rail. These girders are 2 ft. wide and have a depth of 14 in. above the top of the platform, giving a total depth under the rail of 20 in. At intervals of about six feet, heavily reinforced cross walls connect the girders. This installation was described in detail in the January 25, 1930, issue of the *Railway Age*.

There has been no creeping of the rail on the new section since the bolts were tightened down after the first few days of operation. Its behavior indicates that expansion and contraction due to temperature changes are confined to each rail as a unit and are reduced considerably by the transmittal of stress to the support. With the rail firmly anchored to a massive support, it appears to be quite feasible to lay the joints at ordinary temperatures with no allowance for expansion, or even to eliminate most of them by welding.

In making the recent installation, we tried to conform to all requirements of the ideal roadbed as set forth above and at the same time to introduce such economies in the construction as our experience seemed

to justify. The old design required 0.64 cu. yd. of concrete per lineal foot, while the new one requires 0.38 cu. yd., a reduction of over 40 per cent.

In the present instance we tried to get good concrete. The proportioning, mixing and placing of concrete was under the direct supervision of a representative of the Portland Cement Association. Proportioning was done on the water-cement ratio basis, the average being about 4½ gal. of water per bag of cement, and about eight bags of cement per cubic yard of concrete. The aggregate consists of gravel and sand from Green Oak, Mich. Thus far not even a surface crack is visible.

Provision Made for Adjustment of Surface

In the new design we have adhered to the principle of a continuous slab or platform resting on the subgrade and also to the principle of a continuous support for the rail. The third essential, a convenient and economical method for restoring the original surface, has also been provided for. This will be accomplished by raising a low joint to the proper elevation by means of jacks and forcing sand into the space between the bottom of the slab and the subgrade with compressed air through a nozzle placed at the edge of the slab. To facilitate lifting the slab, a pair of stirrups, made of 1¼-in. round steel, are imbedded in the concrete near the end of each slab.

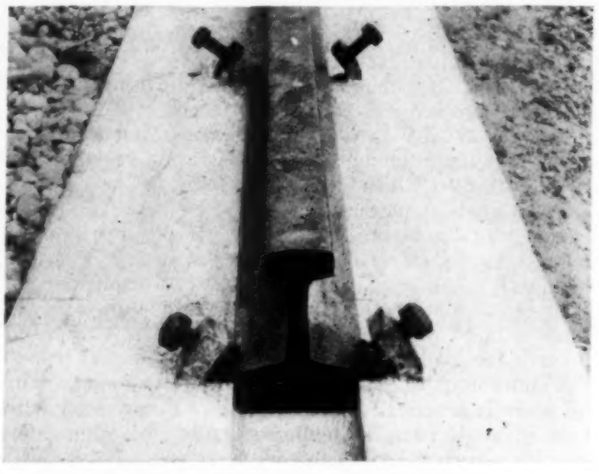
Settlement of the roadbed has been so slight and so uniform that there is no occasion for lifting any of the sections, and to do so for experimental purposes would impair the present grade. In lieu of this, a wood platform 9 ft. wide and 14 ft. long was built. One end was laid on the ground and the other was blocked up about two inches, after which sand was forced under the platform with a cement gun, which is a very convenient tool for the purpose. The result was very satisfactory, the sand being tightly and uniformly packed.

With power-operated jacks to lift the slabs and with compressor, cement gun or similar apparatus, and a supply of sand, all carried on a flat car, a large amount of track could be lifted in a day. Two guns could place 60 cu. yd. per day, equivalent to 1,000 lin. ft. of track having an average lift of two inches. It was partly to facilitate the lifting of the sections that their length was reduced to 19 ft. 6 in., but it was also desired to test the practicability of sections of that length, with a view to the use of precast sections. The objection to making short sections is the possibility of a "teetering" action being set up, due to more settlement taking place at the joints than at the centers of the slabs. If precast sections are used, they can be placed with little interference with traffic. They might be placed on a prepared bed of sand, but probably a more even bearing would be obtained by blocking them to the proper elevation and filling under them with sand by the process described above for lifting slabs.

For insulation purposes in the new installation, care was taken in both design and construction to see that the rail anchors were spaced at least two inches from the longitudinal reinforcement in the cross walls. By the use of a wood rail seat the feeling of rigidity has practically been done away with and by filling between and outside of the girders with gravel, the reflection of noise has been almost eliminated.

The Intangible Value

Having thus outlined the characteristics of an ideal roadbed, and having shown how we have tried to embody these characteristics in our new design, let us ask what such an ideal roadbed would be worth on a section where traffic is heavy? Some of the advantages are intangible, but none the less real. Of these, the most important is greater safety and its concomitant, higher permissible speed. With a continuously supported rail, the rail fracture loses its terrors. In the first place, with tensile stresses so greatly reduced, the possibility of a rail fracture is almost eliminated. In the second place, no serious damage would result if a fracture did occur. At present there is a renewed demand for faster passenger service and for the last few years there has been a marked demand for faster



A Thin Wood Shim Under the Rail Reduces the Feeling of Rigidity

freight service. Only by the adoption of a continuous and massive track support can the growing demand for speed be met with safety and economy.

Next, as to safety and speed, probably the passenger's comfort is the most important intangible benefit. Experienced travelers are quick to notice the condition of the roadbed and are naturally inclined to choose the road that has the smoothest and quietest track. Certain other advantages appear to be very considerable, but cannot be determined with much accuracy from a short experimental section. One of these is reduced train resistance. Some rather crude experiments on our old installation show a decrease of 15 per cent in train resistance as compared with the usual type of track. A roadbed which would reduce train resistance would be of especial advantage on ruling grades, where its use would be equivalent to a reduction of grade.

Another advantage that may reasonably be anticipated is a decrease in the cost of maintenance of equipment, but the saving from this source could only be determined after the new type of roadbed had been installed on an entire division, or at least a good part of a division. No small part of the wear and tear of rolling stock must be due to the bumps and jolts it receives in passing over rough track. With a smooth and even track having no low joints or soft spots, this wear and tear would be reduced to a minimum.

Maintenance Expenses Reduced

In consideration of all factors, an attempt was made to determine the reduction that would occur in the maintenance of way and structures expenses on heavy traffic lines by using a roadbed of the type herein described. Ties and ballast would, of course, be eliminated and the reduction in the rail and other track ma-

terial accounts is estimated at 50 per cent. A lighter rail-section, adapted especially for use with a continuous support, would be used. It would have plenty of width of head and a base perhaps five inches wide, with a total height of only about four inches and weighing about 90 lb. per yd. Such a rail would have as great a cross-sectional area available for wear as the 130-lb. rail now in use, at a saving of 30 per cent of metal. The addition of a few points of carbon would have a wonderful effect in prolonging its life and would easily produce an additional 20-per cent saving, thereby bringing the estimated total reduction to 50 per cent.

It is also estimated that labor of track laying and surfacing would be reduced 80 per cent, as the placing of ties and ballast would be eliminated, labor of renewing rail would be much reduced, lining track would be unnecessary and the endless labor of surfacing would be replaced by an occasional lifting of a few slabs by the process heretofore described. It is also estimated that the reduction of labor thus effected would result in a decrease of at least 25 per cent in the total cost of maintenance of way superintendence.

The advantages that would result from the use of an "ideal" roadbed on heavy traffic sections may be summarized as follows:

Saving in maintenance of track .....
..... $2,000 to $2,400 per mile per year
Saving in maintenance of equipment, possibly
$600 to $1,200 per mile per year
Saving in fuel and number of trains due to less train resistance
Intangibles:
Greater safety
Higher speed
Comfort of passengers
Advertising value.

A Greater Initial Cost

Assuming the use of modern highway construction methods and equipment, including steel forms, it is estimated that a roadbed like the latest installation on the Pere Marquette could be built under ordinary conditions for $35,000 to $40,000 per mile. This does not include rail, angle bars and bolts, which, in place, would add $7,500, making a total of $42,500 to $47,500. As compared with this, first-class track with 130-lb. rail, creosoted ties fully tie-plated, and 18 in. of stone ballast under the tie, costs from $30,000 to $35,000 per mile, giving an excess initial cost of $12,500 to construct the permanent roadbed. The actual accounting, however, in case of replacement would not be quite so favorable, as the old ballast would be retained as foundation and filling for the new track structure. This might cause the total increase in the investment account to amount to $20,000.

With a saving in cost of track maintenance of 10 to 12 per cent on the additional investment required, with a probable saving of 5 to 10 per cent in other operating expenses, and with still other advantages of very real and great, though unmeasurable value, the adoption of the ideal roadbed on heavy traffic sections would be highly profitable to the railroads and of great benefit to the public which they serve.

As to how nearly we have approached the ideal in our last installation on the Pere Marquette, time alone will tell. Progress thus far has been made possible by the interest and liberality of the management of the Pere Marquette and is particularly due to the vision and courage of Frank H. Alfred, until recently its president and general manager, whose realization of the faults of the present type of track led him to advocate a roadbed of a more permanent nature and to initiate experiments in that direction.

Modern Maintenance Methods Discussed by Boiler Makers

MODERNIZATION of shop equipment to keep pace with the rapidly changing demands being made on the motive power of the country was the keynote of the opening address of President George B. Usherwood, supervisor of boilers, New York Central, at the twenty-first annual convention of the Master Boiler Makers' Association. This convention was held at the William Penn Hotel, Pittsburgh, Pa., May 20 to 23, and was attended by more than 550 members, guests and members of the Boiler Makers Supply Men's Association.

In developing his recommentations for modernization, Mr. Usherwood stated: "With the changing locomotive practice, methods and equipment are being tremendously improved. A number of boiler shops are operated by the railroads of this country and in Canada that represent the last word in modern arrangement and facilities. Unfortunately, they are too few. Most of them are plodding along with the same equipment and the same building arrangement that was modern 20, 30, or even 40 years ago. Present heavy boiler operations can be handled properly only with the aid of machinery that has been designed especially to accommodate them. Of course, it is not practicable for roads to scrap the plants they have and completely modernize them overnight. Nevertheless, it is in the interest of efficiency and economy to develop some comprehensive plan of improvement and carry it out over a period of time. In the process, not only can the physical layout of a shop be brought up to date, but boiler production tools can be installed to replace obsolete equipment. In addition, the facilities for the convenience of the personnel can be modernized. Since a man's efficiency depends largely upon his surroundings and well being such things as proper lighting, ventilation, heating, safety precautions, good lavatories, and the like should all be taken into account. Unfortunately, there are many shops, particularly the smaller and older ones, where such things were never thought of when they were built.

"Lately, the tendency on some of the larger systems has been toward the centralization of repair facilities on their various divisions. To a lesser extent, smaller roads have done much the same thing with a considerable degree of success in reducing shopping time and actually saving considerable locomotive maintenance expense. This merging of facilities would seem to be quite logical, and with the savings made by concentrating major repairs at a central plant great improvements would be possible. Instead of buying replacement equipment as necessary for shops scattered all over a given division or entire road, this same expenditure would result in a completely equipped modern repair plant capable of meeting any repair schedule for the entire territory.

"In the same way modern power demands a highly skilled personnel and the future requirements that we as boiler makers will have to meet means that more attention must be given to training adequately the younger men coming along now."

At the opening session M. W. Hassett, assistant superintendent of motive power of the New York Central, addressed the association on the development of the steam locomotive through the past century from its inception. "It may be truly said," stated Mr. Hassett, "that the last twenty-five, and more particularly the last ten years have marked the greatest of this development not only in the locomotive itself, but in every phase of railroad transportation. Equipped with every known device for safe and economical operation, the present-day use and performance of the modern locomotive are amazing in contrast with the locomotive of less than a decade past. It is now possible to extend the run of the individual locomotive to whatever distance the train it hauls may be scheduled to move, be that 300, 500, 800, or 1,000 or more miles.

"In the creation of the design of this splendid locomotive of today quite naturally came the boiler of increased proportions and increased pressures. To what extent locomotive boilers may profitably be designed, with resultant increased pressures, is problematical. We feel assured that continued research and experiment, combined with your expert knowledge and valuable suggestions, will sustain the march of progress.

"There have been vast expenditures of money for the purchase of these locomotives, for the enlargement and improvement of necessary maintenance facilities and for the purchase of a great number of machine tools of improved type. Some economies have been made possible through improved methods of operation, in which the locomotive has had its part, but far more must be done to offset the loss to the railroad through the competition set up by other means of transportation, particularly the motor truck and motor bus. In 1904 there were 410 motor trucks in this country and in 1929 the number had increased to 3,370,000. It remains to be seen if these new methods can survive in competition with the railroads. In the meantime, a heavier responsibility rests upon each and everyone of us than ever before. Every condition that points to improper design, weak construction, or lack of thorough maintenance will necessitate immediate corrective measures if we are to provide the very best transportation service at a minimum cost."

Chief Inspector Alonzo G. Pack of the Bureau of Locomotive Inspection, Interstate Commerce Commission, was to have addressed the association, but was unable to attend. In his absence R. H. Flynn, general superintendent of motive power, Pittsburgh district, of the Pennsylvania, made an address at the Wednesday session on developments that have taken place in recent years in railroad practice and the part the boilermakers can play in continuing the improvement in maintenance conditions.

Better maintenance of boilers was also the subject of W. G. Black, mechanical assistant to the president of the Chesapeake & Ohio, who addressed the convention at the opening session on May 22.

At the final meeting an address which was prepared by C. A. Gill, superintendent of motive power, Baltimore & Ohio, was read in his absence by Ira J. Pool, division boiler inspector of the railroad.

The technical sessions of the meeting were featured by a discussion on the subject of pitting and corrosion in locomotive boilers, which was participated in by many prominent water service engineers and metallurgists. Among those who have for many years worked closely with the master boiler makers in determining the practical results of water treatments on boilers in service and who were at this convention were F. B. Horstmann, chemical engineer, Dearborn Chemical Company; C. A. Seley, consulting engineer, Locomotive Firebox Company; F. J. Jenkins, general locomotive inspector, Texas & Pacific; R. E. Coughlan, supervisor of water supply, Chicago & North Western; J. B. Wesley, engineer water service, Missouri Pacific; Dr. C. H. Koyl, engineer water supply, Chicago, Milwaukee, St. Paul & Pacific; Howard L. Miller, metallurgist, Republic Steel Company; R. N. Speller, director department of metallurgy and research, National Tube Company, and others. The committee report on this subject offered a number of valuable suggestions that the boiler department can follow to advantage in helping toward a solution of this extremely expensive maintenance item.

Closely allied with the subject of corrosion from the standpoint of prevention is proper boiler washing and this topic was discussed at some length by members from nearly every district in the United States and Canada. The symposium of practice presented covers practically every water condition to be found.

An unusual feature of this year's convention, made possible by Pittsburgh's location in the heart of the steel fabricating district, were inspection trips to the Ellwood City Works of the National Tube Company, the Homestead plant of the Carnegie Steel Company and the works of the Flannery Bolt Company.

Election of Officers

The latter part of the Friday morning session was devoted to the election of officers for the ensuing year: President, Kearn E. Fogerty, general boiler inspector, (Chicago, Burlington & Quincy); first vice-president, Franklin T. Litz (Chicago, Milwaukee, St. Paul & Pacific); second vice-president, O. H. Kurlfinke (Southern Pacific); third vice-president, Ira J. Pool (Baltimore & Ohio); fourth vice-president, L. E. Hart (Atlantic Coast Line); fifth vice-president, William N. Moore (Pere Marquette); secretary, Albert F. Stiglmeier (New York Central); treasurer, W. H. Laughridge (Hocking Valley); Charles J. Longacre (Pennsylvania) was elected chairman of the executive board.

Boiler Maker Supply Men Elect Officers

At a meeting of the Boiler Makers' Supply Men's Association, held at the Hotel William Penn, Pittsburgh, May 22, in conjunction with the annual convention of the Master Boiler Makers' Association, the following officers were elected for the coming year: President, Irving H. Jones, Republic Steel Corporation; first vice-president, Reuben H. Peabody, Air Reduction Sales Company; second vice-president, E. S. Fitzsimmons, Flannery Bolt Company; secretary, Frank C. Hasse, Oxweld Railroad Service Company; treasurer, George R. Boyce, A. M. Castle Company. Executive Committee: (one year) M. K. Tate, Lima Locomotive Works; C. S. Wright, Oxweld Sales Company; George H. Raab, Bethlehem Steel Corporation; (two years) V. C. Kuhns, Burden Iron Company; H. N. Reynolds, Huron Manufacturing Company; Leslie Pyle, Locomotive Firebox Company; (three years) Thomas Mahar, American Arch Company; T. P. Champion, Champion Rivet Company; Harry Loeb, Lukens Steel Company.

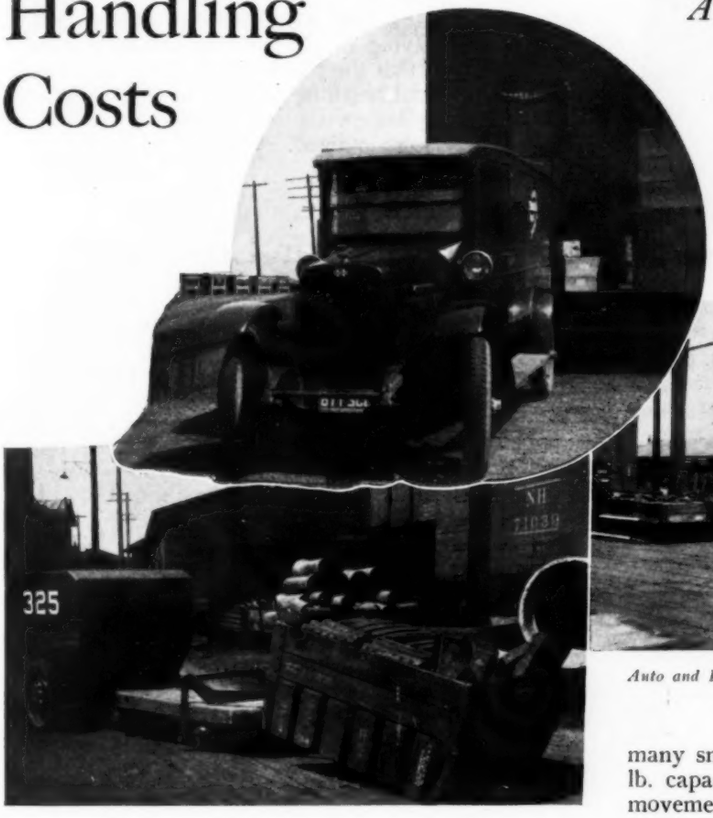
STEAM RAIL COACHES IN SUBURBAN SERVICE are being tried out by the Nanking-Shanghai railway (China), according to Department of Commerce reports. Six new coaches, each providing first and third class passenger accommodations, will make a total of 74 trips daily at 25-minute intervals between Shanghai and North and Woosung Forts stations.

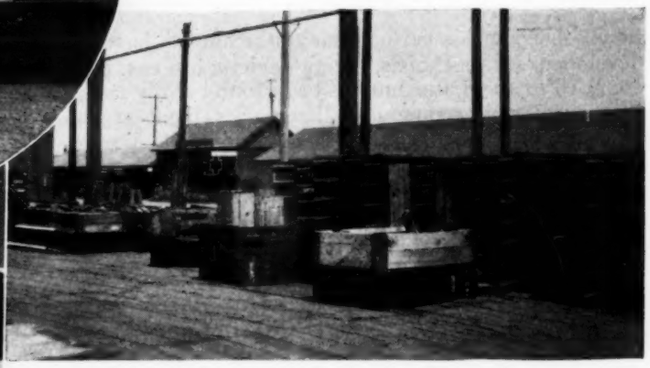
Reducing Railway Material Handling Costs

Auto trucks, tractors and lift equipment open big field of operating savings

By J. V. Miller*

Assistant General Storekeeper, Chicago, Milwaukee, St. Paul & Pacific, Milwaukee, Wis.





Auto and Lift Truck Operations in Milwaukee Stores Work

RECENTLY there came across my desk an advertisement from a large manufacturer, which contained the following quotation: "Let me walk through a company's plant and I'll tell you if I want to buy its stock. Sound profits, today, are a matter of small percentages—saving tiny wastes—preventing little losses. I want to see if the management has planned to save a half of a per cent here, a quarter of a per cent there. If it has, I know that management is sound."

The statement could have been inspired by watching material-handling methods in various plants because the methods used have much to do with the final result of a plant's operations. Many of the savings from improved methods are large, but it is the small savings that have usually escaped attention.

Material-handling engineers, in their studies of industrial plants, have arrived at the conclusion that from 50 per cent to 75 per cent of all production costs are for handling materials. Can we say that this does not hold true of our railroads? On the contrary, our material-handling problems are perhaps more complicated, as we have an ever-changing problem, and practically every size and share of material to handle. It is probable that our material-handling costs are equal to or more than those of the average industry. Material handling is a field which will produce more dollar-for-dollar returns on the investment than any we have at this time.

During the past few years there have come into use many small types of cranes of from 2,000 lb. to 8,000 lb. capacity which are very flexible in their uses and movements. At present, the lifting capacity of the great majority of such equipment in railway use is under 1,000 lb. and the number of men employed in the work is large. The nature and location of the work precludes the installation of large cranes, but tremendous savings can be made with these small cranes. Also, this is the kind of work that is most hazardous, and many minor, but painful, injuries can be avoided by the installation of the better forms of such equipment. A complete study of this type of crane and its uses will surprise one as to the number of units that can be advantageously used. It should be emphasized, however, that cranes were designed to lift materials and not for hauling materials and running around. The more they can be kept standing still and used for lifting, the larger will be the return on the investment.

There are many uses for automobile trucks in railway material-handling work. Stores officers are prone to say that they have requested this equipment, but cannot convince their managements to authorize its introduction. It has been my experience that the fault is with the applicant, who did not give the matter proper study and failed in his presentation of facts. There are very few terminals at this time where auto trucks cannot be used economically. A good way to obtain definite facts is to secure a truck and ship it from one point to another for service and thereby develop what can be done with it. On the Milwaukee, the auto truck has proved so useful that we have installed additional trucks at points where we were doubtful at first that the installation of one truck would pay.

For the last ten years or more, all railroads have invested heavily in tractors, but I have not heard of any that have not earned returns far beyond their expecta-

* From an address before the Pittsburgh Railway Club on May 21.

Cleaning Up the Car Yards at the Close of a Day's Work at Tacoma, Wash., by Tractor Methods

tions. During this period, many attachments have been developed, such as hoists, lifting devices, brooms, plows, etc. All of these attachments have found ready use and have resulted in economies. Their uses, however, must be constantly extended. It is not enough to purchase a tractor and then turn it loose to give hit-and-miss service. Its operations must be constantly studied, and in so far as possible, its work definitely programmed. There are many tractor installations that could, with but little effort, double the return on their investment.

Lift Trucking Just Begun

Lift trucks are perhaps the latest innovation in material handling on railroads. Contrary to general belief, the lift truck is not a new device. There are many roads that have had lift trucks in service for years, but it is only in the last two or three years that their real worth on railroads has been recognized. Due to their compactness and their four-wheel steering, they can get into and out of tight places and have thereby filled a long-felt want in our material-handling field. Their loading unit, a skid, being low in price, can be used to store the material until used, thus eliminating many re-handlings. It has also been found economical to place the loaded skid in box cars, shipping it to destination and having it returned with other material. This reduces the time of loading cars and results in great economies.

There are two types of lift trucks, hand and power, ranging in capacity from one-ton to 20-tons, and there are designs to fit almost any need. Their purpose is not to eliminate other equipment, such as trucks and tractors. Instead, they will make more of this equipment necessary, as they tend to build up loads formerly handled by push trucks and many men, into heavy units beyond man's capacity.

The lift truck has done more to open our eyes to the possibilities in material handling than any machine adopted to date, and we have only scratched the surface of its possibilities. Those not familiar with the lift truck should investigate it thoroughly.

Unified Control Desirable

The knowledge of what each machine can and should do can best be accomplished by unified control of all equipment. This places the problems in one basket, and provides for their operation in an orderly way. As each machine is brought up to its maximum efficiency in the given assignments, additional equipment should be added as quickly as possible to avoid complications. In order to do this, those in charge must constantly look ahead, so that they will at all times know when to have the additional machines ready for installation.

Another important requisite of efficient material handling, and one that is constantly overlooked, is the spare machine. Material-handling equipment is subject to hard usage and minor repairs are frequently required if the whole operation is not to be seriously impaired. Spare equipment is not as expensive as the delays caused by not having it. It must be distinctly understood, moreover, that the purchase of all the equipment known for material handling will not save a dollar, unless it is properly supervised and constantly studied, as well as properly maintained.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 17 amounted to 930,004 cars, which was not only less than the loading in the previous two weeks but 116,590 cars less than that in the corresponding week of last year and 73,284 cars less than that in 1928. All commodity classifications showed reductions as compared with last year. Coal loading was 21,332 cars less and miscellaneous loading was 43,103 cars less. Also all districts reported reductions as compared with both 1929 and 1928. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, May 17th, 1930

Districts	1930	1929	1928
Eastern	215,301	249,474	238,389
Allegheny	190,569	220,743	205,190
Pocahontas	51,327	58,667	56,565
Southern	128,272	142,647	146,772
Northwestern	144,245	161,476	149,971
Central Western	128,937	139,171	133,086
Southwestern	71,353	74,416	73,315
Total West. Dists.	344,535	375,063	356,372
Total All Roads	930,004	1,046,594	1,003,288
Commodities			
Grain and Grain Products	37,457	37,552	38,364
Live Stock	23,069	25,849	25,231
Coal	134,604	155,936	153,306
Coke	9,265	12,593	10,140
Forest Products	52,789	69,523	68,315
Ore	57,113	72,209	52,004
Mdse. L.C.L.	248,135	262,257	261,449
Miscellaneous	367,572	410,675	394,479
May 17	930,004	1,046,594	1,003,288
May 10	933,931	1,048,960	1,002,411
May 3	942,899	1,051,935	978,053
April 26	907,174	1,051,885	963,007
April 19	892,881	1,005,880	945,289
Cumulative totals, 20 weeks	17,696,138	19,290,159	18,515,255

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 17 totaled 62,493 cars, an increase over the previous week of 1,564 cars but a decrease of 5,367 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 17, 1930	62,493	34,155
May 10, 1930	60,929	35,409
May 3, 1930	59,027	37,052
May 18, 1929	67,860	42,886
Cumulative Totals for Canada		
May 17, 1930	1,145,047	730,515
May 10, 1929	1,270,317	868,467
May 19, 1928	1,261,197	800,440

OFFICERS of the Great Lakes Railway Employees' association, meeting at Superior, Wis., on April 26, passed resolutions calling upon the Wisconsin legislature for an increased rate of taxation for motor coaches and trucks operating on public highways.

Rock Island Extends Use of Tabulating Machines

Saves labor and decreases discrepancies in per diem accounting—Simplifies passenger car and caboose records

By W. L. Linnehan

Assistant Auditor Car Service Accounts
Chicago, Rock Island & Pacific

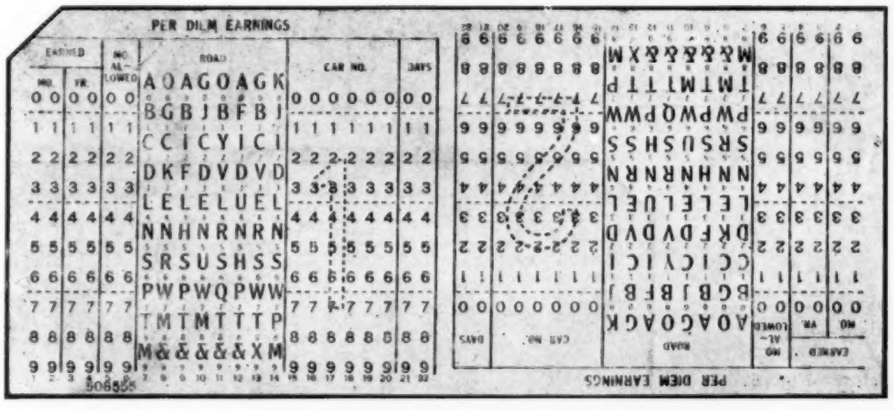
THE use of tabulating machines in handling per diem receipts has been found not only to effect a saving in clerk hire in the transcribing, verifying, sorting and entering per diem credits but has also established a simple and accurate accounting principle and in addition resulted in reducing discrepancy claims. This application was accomplished by making a combination in coding all railroads in the United States into numbers in one counter (see Fig. 1) and the code numbers of the railroads are decoded back into their road initials when passed through the printer, the manufacturer having built a special bank on the printer covering letters which would correspond with the code numbers, which special bank is the cardinal key to its success.

The punch duplicator automatically punches month and year earned, month allowed and road code number through the operation of a master card. We may have two thousand items reported by one railroad and a master card is made of that railroad with the result that the machines automatically punch two thousand items and the only work for the punch operator is to punch the individual car number and days earned.

The cards punched represent allowances in the regular month's account and adjustments in the first, second and third subsequent months. The adjustments cover-

Right—Fig. 1

Below—Fig. 2



1214 4-29 Form 1190

THE CHICAGO, ROCK ISLAND & PACIFIC RY. **OFFICE OF AUDITOR CAR SERVICE ACCOUNTS**

Per Diem Earnings of Rock Island Lines Freight Cars while on other Railroads

Month..... Book No..... Sheet No.....

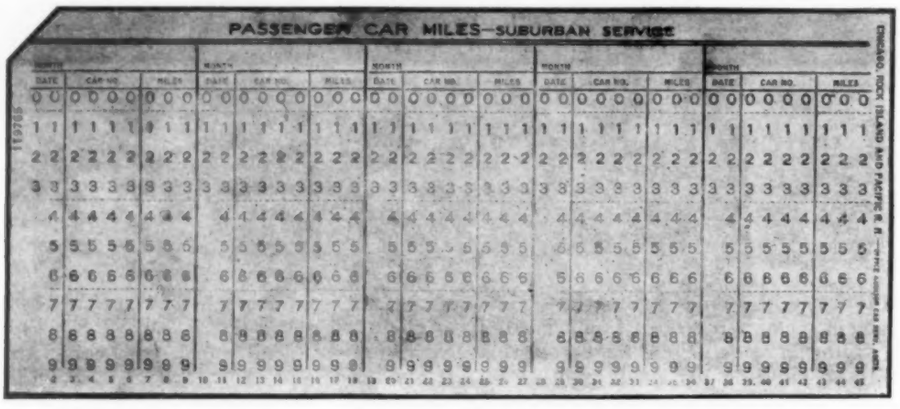
EARNED MONTH	EARNED YEAR	MONTH ALLOWED	RAILROAD	CAR NUMBER	CHECK COLUMN	PER DIEM ALLOWED	ADJUSTMENTS RAILROAD	ADJUSTMENTS DAYS	ADJUSTMENTS MONTH	ADJUSTMENTS RAILROAD	ADJUSTMENTS DAYS	ADJUSTMENTS MONTH	DISCREPANCY CLAIMS RAILROAD	DISCREPANCY CLAIMS DAYS	CANCELLATIONS RAILROAD	CANCELLATIONS DAYS
5	29	05	C&NW	59856		2										
5	29	05	CN	59856		2										
5	29	05	C T	59856		4										
5	29	05	NOP	59856		23										
5	29	05	N C F N	59857		2										
5	29	08	CM &ST P	59857		5										
5	29	05	CM &ST P	59857		1										
5	29	05	CI&L	59857		4										
5	29	05	IU	59857		7										

ing deductions, designated by colored cards, are printed the same as an addition, but each car is marked with a minus sign in red pencil in the ledger printed form. These cards are punched with accuracy at the rate of 3,500 per eight-hour day, although a test reveals that an operator can punch 18 per minute. The card has been put up in tumbler form so that it can be utilized twice. It is also possible to prepare this card in form where it can be used three or possibly four times, according to the requirements necessary.

At the end of the month the sorting of 100,000 cards is accomplished by the sorter into numerical order or into car record book order by first sorting the units, tens, hundreds, etc., columns and the result is that the individual cars are segregated, showing the earnings reported by each railroad. This machine can sort about

Right—Fig. 3

Below—Fig. 4



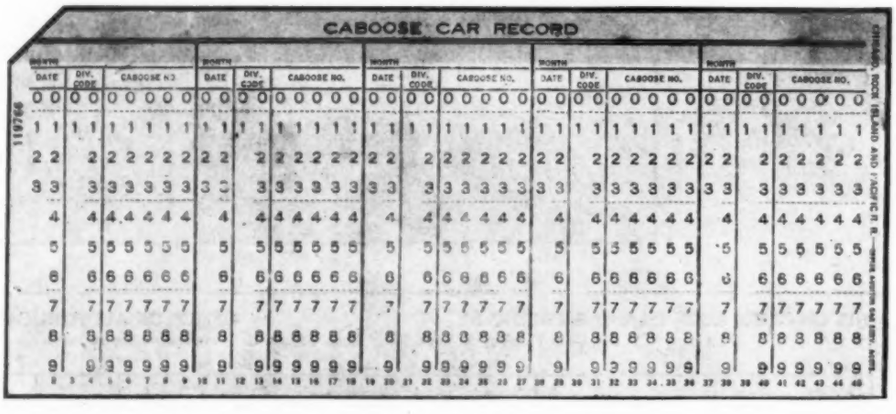
SUBURBAN PASSENGER CAR MILEAGE

MONTH OF JULY 1929

Car No.	Total Miles	Car No.	Total Miles	Car No.	Total Miles	Car No.	Total Miles	Car No.	Total Miles
2500	2048	2525	1897	2550	1992	2575	1952	2600	2113
2501	920	2526	2200	2551	1789	2576	1640	2601	1838
2502	1774	2527	1568	2552	1909	2577	2228	2602	2298
2503	1738	2528	1641	2553	1996	2578	1036	2603	2784
2504	1272	2529	1125	2554	2480	2579	1608	2604	3652
2505	1196	2530	1268	2555	2818	2580	1400	2605	3292

Right—Fig. 5

Below—Fig. 6



Sheet No. 1.

CABOOSE CAR RECORD

MONTH OF JULY 1929.

Date	Div. Code	Caboose	Date	Div. Code	Caboose	Date	Div. Code	Caboose	Date	Div. Code	Caboose
1	04	17700	8	14	17724	1	14	17918	1	09	17940
1	04	17700	15	14	17724	8	14	17918	8	09	17940
15	04	17700	15	14	17724	15	14	17918	15	09	17940
15	04	17700	15	14	17724	23	14	17918			
23	04	17700	23	14	17724				1	09	17941
			23	14	17724	15	14	17919	15	09	17941
1	07	17701				23	14	17919	23	09	17941
8	07	17701	1	09	17900				23	09	17941
15	07	17701	1	09	17900	1	04	17920			
			8	09	17900	15	04	17920	1	09	17942

400 cards per minute. The cards are then put through the printer and are printed, as shown in Fig. 2. The printer can print about 70 cards per minute. The record shown in Fig. 2 is in book order representing the same cars in the same order as in each local car record book. The sheets of this record are checked by the discrepancy clerks against the car record to verify the credits due and also enable them to make discrepancy claims.

The discrepancy claims, in one of our tests, were reduced approximately 70 per cent, following the location of errors made by various railroads reporting credits for our cars on their lines under the wrong car numbers. In other words, the per diem credits allowed on our cars under the wrong numbers are matched up, resulting in eliminating discrepancy claims. It can be readily observed that heretofore labor was not only wasted in our office in compiling claims, but was also wasted in railroad offices to which the claims were sent, by handling which resulted in nothing by clearing a record and no exchange of money. This ledger form simplifies the accounting, makes a permanent record of the earnings of each car by respective roads and a record of every discrepancy claim made and its final disposition. It may be mentioned that the human element error involved in punching the cards can be overcome by footing up car numbers and days on each per diem report and running the cards through the tabulator, totaling all car numbers and days, and the comparison will result in all errors being detected. However, we have learned by experience that there is no need of going to this additional labor in balancing in view of our discrepancy claims being checked against the per diem report before they are mailed.

This installation in lieu of the methods commonly used—namely, transcribing, verifying, sorting and entering credits in car records—has proved a saving in clerk hire; has eliminated errors and has established an accounting principle with a permanent record. There is also a saving in labor in compiling discrepancy claims in our office and a saving in labor by various railroads handling our discrepancy claims. There is also undoubtedly a saving in money which cannot be determined due to the elimination of misplaced discrepancy claims. The record in this form assists the supervisor to account conclusively for every dollar due.

Passenger Suburban Car Record

The individual passenger cars in our suburban service average about six moves per day and the total mileage of each car is punched daily on a card, Fig. 3, direct from the conductor's passenger wheel report. The card is put up in form so that it can be used for five periods. An operator averages 4,500 cards punched per eight-hour day. The cards comprising the month's business are passed through the sorting machine and sorted into numerical order and after being passed through the printer they produce a record of the total individual car mileage, Fig. 4. This statement is pasted in our passenger car records for a permanent location car report. It further serves the statistical requirements of our operating officers and the Interstate Commerce Commission in reporting passenger car miles. It saves clerk hire and produces a neat, accurate statement.

Caboose Car Record

Our former caboose car record showed the location of cabooses four dates per month and was used solely for divisional distribution purposes. The installation of the card, Fig. 5, was accomplished by means of coding each operating division into a number. The cards are put up in form so that they can be used for five months' service. An operator averages about 3,000 cards punched per eight-hour day. These cards are punched direct from the conductor's freight wheel reports and at the end of the month they are sorted into numerical order and date order. They are then passed through the printer making an individual caboose car record showing individual location, Fig. 6. This statement is pasted in our car record book for record purposes only. It has saved clerk hire and resulted in a neater and more accurate record.

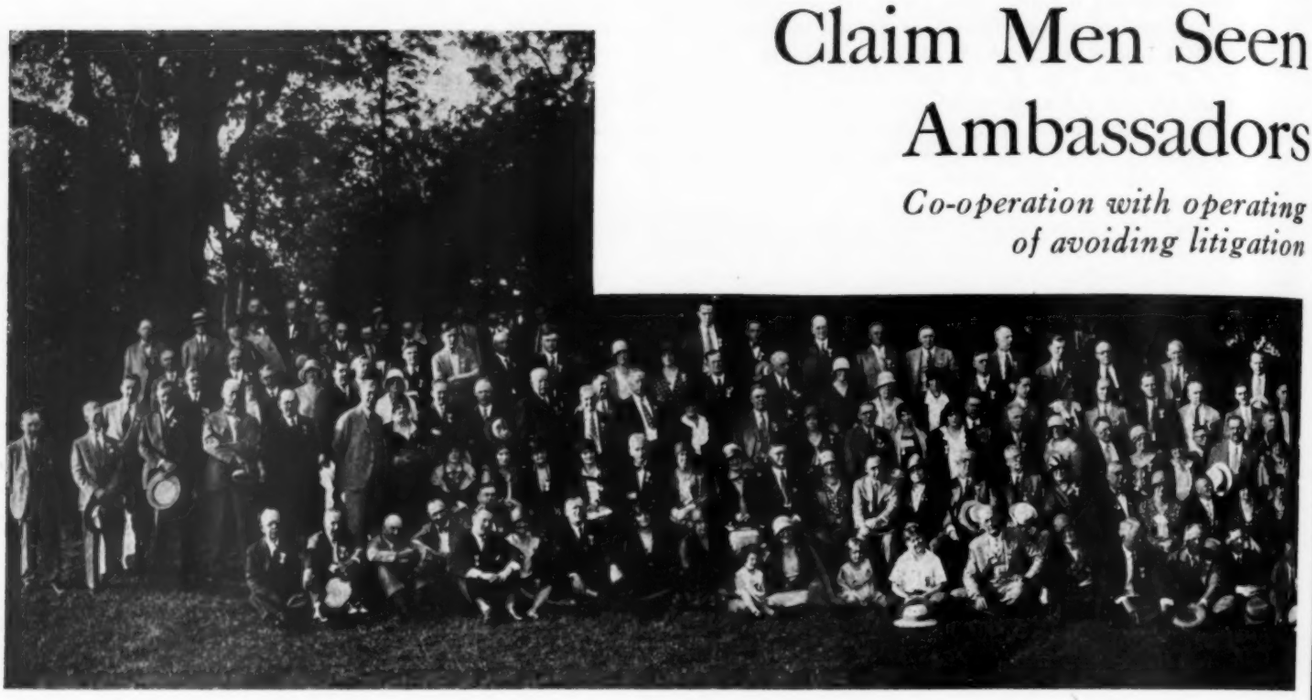
* * * *

Evolution on the Great Northern

A photograph of three Great Northern locomotives, depicting the development of motive power on that road. On the left is the "William Crooks," the first locomotive operated in the state of Minnesota; in the center, No. 2525, a modern oil-burning passenger locomotive, and on the right, one of the new Westinghouse-equipped electric locomotives used in the Cascade Tunnel service.

Claim Men Seen Ambassadors

Co-operation with operating of avoiding litigation



The Attendance Was the Second Largest on Record

THE importance of the claim agent as an ambassador of good will from the railroads to the public was the outstanding topic of discussion in a program which included consideration of inter-departmental relationships, the saturation point of settlements and verdicts and other important subjects at the forty-first annual convention of the Association of Railway Claim Agents, held at Richmond, Va., from May 21 to 23. Much emphasis was also placed on the advisability of settling all possible cases out of court and without litigation.

Attendance at the meeting, presided over by Smith R. Brittingham, assistant general solicitor of the Seaboard Air Line, totaled 329, less than the record of 456 established at the Detroit convention in 1929, but larger than at any previous gathering of the association. Officers elected on the last day of the convention to serve for the coming year are as follows: President, Frank Wenter, Jr., general claim agent, Chicago & North Western, Chicago; first vice-president, H. L. Dunham, general claim agent, Chesapeake & Ohio, Richmond, Va.; second vice-president, F. R. Haney, general claims adjuster, Canadian Pacific, Montreal, Que.; third vice-president, (re-elected) H. A. Rowe, claims attorney, Delaware, Lackawanna & Western, New York, and secretary-treasurer, (re-elected) H. D. Morris, district claim agent, Northern Pacific, St. Paul, Minn. Toronto, Ont., was selected for the next convention, to be held during the third week of June, 1931.

President Advocates Improved Court Procedure

In his opening address, after briefly reviewing the growth of the association, President Brittingham attacked existing court systems, advocating a simplified method of judicial procedure. He spoke in part as follows:

In theory, our governing powers are built on the plan of a trinity of divisions acting as checks and balances. But this is largely historic and theoretical. The rapid changes that have come about in the last 50 years have pushed the executive and legislative branches so far ahead of the judicial that our methods of administering the law are trailing in the mire and mold of ancient fictions.

The so-called case-system gradually engrafted on the law by a drowsy judiciary; involved modes of appeal, motions and continuances; expensive delays incident to "sounding dockets" and setting cases; absurd methods of adducing evidence; attempts to discover crucial facts by hiding them in order to confuse incompetent and untrained jurors; nauseating instructions and charges of courts to juries that not even the judges can get straight more than half the time—these and a multitude of other monstrous conditions point with inescapable certainty to the utter breakdown of our present system of administrative law in civil cases. It becomes daily clearer that such a system is an anachronism entirely out of step with modern life and needs.

Let it not be thought that the benefits that could come from a new order of administrative law would be felt merely by industry. The greater benefits in our railroad world would come to labor. As it is now, compensation for injuries to employees on railroads is utterly disjointed, unequal and absurd, because inequality is an essential characteristic of all liability laws and the present system of their administration.

We need to be liberated from 17th century judicial procedure We need to free those entitled to compensation from the delay, the expense, the incongruities of present-day administrative law. A fact-finding body—and not a wool-gathering and befuddled jury—should be provided to determine scientifically the facts of a case. With facts thus found, the legalistic art of persuasion becomes passé, because science knows no such thing as persuasion. Facts eloquently speak for themselves. They are not emotional and need no shyster to trick his listeners into tears. Neither do technicalities mix well with facts; and therefore under the new procedure the law's quibbling could not defeat just claims, as is now quite common.

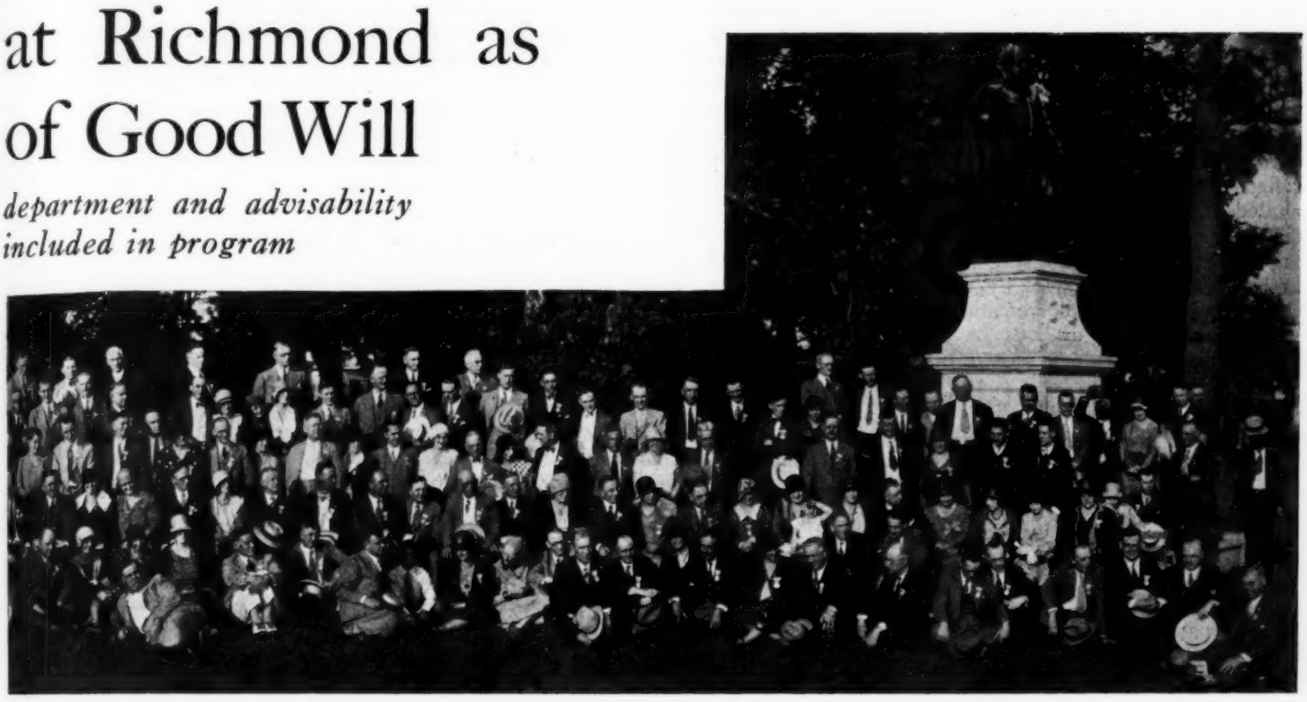
The problem of reform is a tremendous one. Yet forget not that this association can survive and live vitally only by grappling with problems and ideals worthy of a human brain.

Claim Agents Good Will Ambassadors

Discussion of the importance of claim agents as ambassadors of good will from the railroads to the public, the first topic on the program, centered mainly about a paper prepared and presented by G. M. Crowson, as-

at Richmond as of Good Will

department and advisability included in program



The Convention Photograph Was Taken at the John Smith Monument, Jamestown, Va.

sistant to vice-president, Illinois Central. After a brief outline of the value of good will in all business contacts, Mr. Crowson went on to say that railroads have a special need of good will—an intangible factor over and above the rendering of good service at reasonable rates—to ensure patronage and to prevent unjust legislation and court decisions. The duty of establishing and maintaining this good will, he added, devolves upon every class of employee, but upon none more importantly than on the claim agent.

On this phase of his subject, Mr. Crowson's paper read as follows:

The first good will duty of the railway claim agent, as I see it, is to be honorable and fair in all his relations with claimants, and there is no conflict between that duty and any other. He is the guardian of the treasury, but it must not be guarded at the expense of honor and fairness, or the loss is likely to outweigh the gain.

In no other department of the railroad does the policy of fairness and justice in dealings with the public meet such a severe test as in the claim department. In no other department is there such a great challenge—and such a great opportunity—to cultivate public good will. In no other department is there such an urgent need of impressing that policy upon those who deal with the public.

Every contact between a railroad and the public is a human contact. With the railroad performing prompt, efficient and courteous service at rates which the public recognizes as fair and reasonable, most of these are friendly and cordial. It is when something unusual occurs, when some accident happens, causing a breach in these friendly relations, that the claim agent appears on the scene. His relations with the public are always at the sore spots, where good will and friendship are strained to the breaking point.

Every claimant with whom the claim agent deals has a real or fancied grievance against the railroad. He is potentially if not actually an enemy of the railroad. The future attitude of that claimant toward that railroad, and toward all railroads, will largely depend upon the tact, fairness and considerate treatment he receives at the claim agent's hands.

That the claim agent must be firm and even uncompromising on occasions is naturally true. He is confronted with many trying situations and many preposterous demands. Here, however, is where tactfulness and fairness are most needed —tactfulness toward the claimant and fairness toward both the claimant and the railroad. Whatever the situation, the claim agent can go a long way toward winning the friendship and restoring the confidence and good will of those with whom he deals by reminding himself on every such occasion that he is representing a railroad that seeks to be just and honorable in all its dealings and is desirous of meriting the friendship and esteem of the public.

Mr. Crowson continued with a brief sketch of the general improvement in public good will which railroads as a whole have experienced in recent years, when intensive promotion of friendly public relations has done much to defeat the efforts of unscrupulous politicians, damage-suit lawyers and the like. His concluding sentences were as follows:

It is not always possible to measure the benefits of good will in dollars and cents. Such benefits have many ramifications. They are reflected in the better feeling that prevails between the railroads and their patrons and between railway employees and managements, in the greater co-operation between the railroads and the shipping public and in the greater efficiency of the railroads themselves.

In your own branch of railway activity there has been a striking improvement in recent years. Prejudice and hostility have been largely supplanted by justice and fair play. Friendly settlements are more frequent, and the principle of the golden rule prevails to a greater extent than ever before.

That there is still room for improvement no one will deny. It will take a long time fully to efface the prejudice that once prevailed against the railroads. It will require constant effort to hold the ground we have already won in our struggle for public favor and to carry the banner of good will forward to the objective for which we are striving. But there is satisfaction in the progress that has been made and in the knowledge that our struggle has the support and co-operation of railway men in all ranks and in every department of the service.

Discussion

W. L. Stanley, vice-president of the Seaboard Air Line, who discussed Mr. Crowson's paper, expressed himself as being in complete agreement with the principles set forth therein. After asking how it was possible for the claim agent to promote good will when the very nature of his work tends to breed hostility, he

answered his own question by advising the members of the association to develop a reputation for seeking the truth in all investigations, particularly in those where employees are concerned, even though that truth may establish the liability of the railroad. Recommending the constant use of courtesy and of absolute fairness, to create an atmosphere which would favorably reflect the character of the railroad business, he concluded with the statement that since there is no material difference between the work of the claim agent and any other work, a claim agent can make himself an ambassador of good will by conducting himself with the same honesty, integrity and fairness that he would use in anything else.

Inter-departmental Relationships

"Inter-relation Between Operating and Claim Departments" was the subject of a paper presented by Col. W. S. Battle, Jr., vice-president of the Norfolk & Western. After reviewing the increase in the importance of the claim department, Col. Battle stated his main thesis in the following paragraph:

The responsibility of pointing out the causes and suggesting the remedies lies in the claim department; the responsibility of applying the remedy rests with the operating department. The two working together results in as safe and efficient railroad operation as it is humanly possible to secure. The claim department, in which all claims for personal injury, loss and damage finally come to rest, is best qualified to point out what should be done by the operating department to improve conditions, while the enthusiastic co-operation of the operating department saves life and limb and damage. Co-operation between the two departments—and that means translating talk into action—must be undertaken in the utmost good faith.

Col. Battle went on to point out, as some of the essentials for efficient team work between the two departments, a correct understanding of the rights, duties and responsibilities of the parties at interest; mutual interest and enthusiasm in the undertaking; a desire for close co-operation; free interchange of thought and information, and personal acquaintance, cordial relations and confidence between the individual members of the claims and operating forces. Opportunities for the exercise of such team work will be found, he continued, in the investigation and adjustment of accidents; in the correction of conditions calculated to cause accidents; in dealing with the public and with employees, and in finding employment for men who have been crippled in the service.

Discussion

Comment on Col. Battle's paper by Frank Wenter, Jr., president-elect of the association, again emphasized the necessity of team work between the various departments, such co-operation to be made effective by the cultivation, by the personnel involved, of a hearty desire and intent to bring it about. In enlarging upon these points, Mr. Wenter added that:

The claim man should at all times feel himself one of the staff of the operating department and should take advantage of his many opportunities for observation so as to keep the supervisory officers of his territory informed as to any bad risks, unsafe practices and conditions, or harmful attitudes involving the welfare of the railroad and its employees, with the idea of permitting educational or corrective action.

It is equally necessary that the personnel of the operating department be impressed with the importance of prompt advice of accidents to the claim department, as well as the necessity of exact and intelligent inspections, promptly made and followed by reports. It is also important that such inspections be made in such a way as to make them available for proof, if needed, in litigation.

A second discussion, prepared by W. M. Jeffers, vice-president of operation of the Union Pacific, and presented by A. B. Van Arsdale, of the claim department of that road, further stressed the importance of team work between the various departments, with the additional thought that such co-operation is an important factor in improving public relations, on the ground that "the reaction of the public, our customer, is most favorable to all these activities."

Discussion of Other Topics

Although most of the other subjects presented for consideration at the meeting were of particular rather than of general interest, the value of the claim agent in improving the public relations of his railroad and the necessity, under present-day judicial procedure and court conditions, of settling as many cases as possible out of court were the central themes running through most of them. Brief summaries of these papers are given below.

Saturation Point of Settlements and Verdicts

In discussing the question "Has the Saturation Point Been Reached in Personal Injury Settlements and Verdicts? What of the Future?", C. H. Schutte, assistant general claim agent, Missouri-Kansas-Texas, Texas Lines, answered in the following words:

The first part of the question—that relating to settlements—should be answered in the negative; the second part—that relating to verdicts—depends entirely upon how much we embrace in its consideration. Settlements are more or less guided and based upon verdicts, and so long as judgments are higher, it can hardly be said settlements are anywhere near the saturation point. Whether verdicts have reached the top is doubtful. If we consider the average, I think there is little question but what they will absorb more, but if we accept individual and isolated exceptional cases as the criterion, it seems to me that they have gone over the top.

He then listed a number of exceptional verdicts, running as high as $95,000 in death cases, and concluded with the recommendation that litigation be avoided whenever possible.

Experience shows it does not pay to litigate. If we are to prevent increasing judgments we must, if need be, lean more liberally in our conclusions on liability and raise our figures on settlements. Our settlements and average judgments will go higher, but the claim departments hold the key to the problem. So long as they retain it, they can control to a large extent the number of cases litigated. While such action may have a tendency to increase settlements, it will substantially decrease total amounts paid on judgments.

F. W. Bower, assistant to claims attorney, Southern Pacific, added to Mr. Schutte's paper an anlysis of the causes of such increased settlements and verdicts, finding them mainly in increased wages, improved standards of living and activities of ambulance chasing lawyers. While substantially agreeing with Mr. Schutte as to the remedy for these conditions, he also advocated, insofar as employees are concerned, a federal compensation act, requiring the railroads to pay only where negligence can be proved.

Dealing with the Crooked Doctor

In his discussion of a paper presented by G. T. Hellmuth, claims attorney of the Chicago, North Shore & Milwaukee, on methods of curbing the activities of crooked physicians who submit false testimony as to injuries, Dr. J. M. Gibbons, general attorney of the New York, New Haven & Hartford, took exception to the remedies suggested. Whereas Mr. Hellmuth recommended careful scrutiny of such a doctor's testimony, severe cross-examination and his possible impeachment as a witness, followed by criminal prosecu-

tion wherever possible, Dr. Gibbons strongly advised settlement of all possible cases out of court. He described the problem as one which centered in large cities and in which the prevention of perjury was the basic question involved. Since the perjuror cannot always be discredited, as Mr. Hellmuth had advised, and since juries cannot always be depended upon to mete out justice, especially in employer-employee cases, the only infallible solution of the situation, he repeated, was to keep the case from coming to trial.

Handling Claims of Motor Coach Lines

Asserting that settlement of claims against motor coach lines is usually easier than adjustment of those against railroads, because of the closer personal contact between coach companies and their patrons, the fact that there are ordinarily more witnesses to an accident involving a motor coach than to one involving a train, and the greater familiarity of the general public with the rights and duties of an automobile driver, D. H. Kimball, claims attorney of the Great Northern, advocated direct settlement by coach companies of claims against them, rather than recourse to an insurance company. This was particularly desirable, he concluded, when the coach line was a subsidiary of a railroad, because then the well-organized claim department of the railroad could handle cases against both companies, simply by careful and intensive organization of its work, as demonstrated by the experience of the Great Northern.

Technical Reports

A technical paper on "The Railroad's Liability for Medical Expenses" was presented by J. D. Abbott, general claim agent of the Oregon Short Line. Reasoning from various court decisions on the subject, Mr. Abbott summarized his conclusions in the statement that:

The railroad's liability for medical expenses is not generally governed by statutory enactments, but arises out of an implied contract, a demand of society from the humanitarian standpoint, the necessity for emergency treatment, or the applied policy of the carrier to care for its patrons and employees so as to amount to a custom, regardless of whether the person be a passenger, licensee, traveler on highway, trespasser or employee. If liability attaches, it is clearly to the railroad's interest to render prompt and efficient medical service for the purpose of minimizing the results of the injury.

Discussion of this paper by Bowman Jarrott, general claim agent of the Panhandle & Santa Fe, followed the same general plan of reasoning from legal decisions, with substantially the same conclusions reached by Mr. Abbott.

W. F. Every, general claim agent, Northern Pacific, in dealing with the question of a definite policy for the handling of joint claim problems not covered by contract, suggested that a sound and workable policy might be based upon a code of rules similar to those originated by the Master Car Builders' Association. In developing this thought he advocated that responsibility should follow possession in the case of freight equipment and receipt of earnings in the case of through passenger equipment, unless negligence on the part of either road could be definitely proved. In his discussion of Mr. Every's paper, E. W. Sprague, general claim agent of the Illinois Central, recognized that no single policy could cover all joint claim problems which might arise, but agreed that a definite understanding wherever possible would save friction and contribute to economy and prompt handling.

A demonstration of the method employed by the New York Central in taking stenographic statements from injured persons, with W. J. Holden, district claim agent at Chicago, impersonating the claim agent, J. E. Baker taking the part of a man injured in a crossing accident, and C. C. Gleiner acting as stenographer, took the place of a formal report on this subject, after a few preliminary remarks on the general advantages of such statements by Mr. Holden.

A paper on "Safety Drives—Their Values, Fallacies and Effect in the Handling of Claim Work," was presented by J. S. Douglass, general claim agent, Gulf, Colorado & Santa Fe. Both the paper and the discussion of it by H. A. Rowe were largely statistical in nature. Dr. Frank Eskridge, district surgeon of the Seaboard Air Line, who was to have covered the subject "Medico-Legal Evolution of Head and Eye Injuries," was prevented from attending the convention, so that his paper was not presented.

Report of Grade Crossing Committee

The Grade Crossing Committee, under the chairmanship of H. A. Rowe, claims attorney, D., L. & W., submitted a particularly encouraging report, which follows in part:

Despite an increase during 1929 of eight per cent in the registration of motor cars in the United States, so that we have now reached the total of 26,501,000 vehicles, and an increase of 13 per cent in fatalities due to motor vehicle operation throughout the country, deaths at railroad crossings during the year 1929 were actually reduced three per cent, with a saving of 83 lives, total fatalities being 2,485 in 1929 as against 2,568 in 1928. Injuries rose only two per cent, to 6,804, an increase of 138 over the 6,666 injuries reported in 1928. This figure compares with a total of somewhere between 800,000 and 1,000,000 motor vehicle injuries per annum upon highways.

Organized railroad efforts have played an important part in holding the railroad crossing accident record in moderate check, and we should be encouraged to carry on intensive activities. Crossing eliminations should continue vigorously. In 1928, the last year for which official records are available, 270 level crossings were eliminated at an expense of many millions of dollars, but at the end of that year we were confronted with an increase of 1,697 crossings, the total then being 240,089.

Your committee feels it within its province to urge upon the railroads the desirability of steadily improving the physical conditions at crossings; removing unnecessary obstructions to the view; keeping watchmen constantly upon the alert; adding to our automatic warning devices, and, if possible, improving the type of device, and having our crews more faithful than ever in warning the highway traveler of the approach of trains by adequate use of whistle and bell—such signals to be carried to the crossings.

There is another duty devolving upon the railroads: namely, that of educating the public to a knowledge of the hazard at the crossing and the methods of overcoming that hazard. This work is being carried on by the Safety Section of the American Railway Association, which annually conducts its Careful Crossing Campaign during the summer months. In 1929, 542,645 posters were displayed and 613,850 booklets were distributed. Another avenue of publicity was the display in motion picture houses throughout the nation of a rider film, "Look-Listen." Prepared by Mr. Wenter, and sponsored by the American Legion, it was displayed before 8,908,000 persons.

The attention of claim men is called to an avenue of their co-operation which should be more definitely employed: namely, the placing in the hands of persons with whom they come in contact a copy of the Careful Crossing booklet, which may guide some individual to a safe course in passing over a railroad crossing. This booklet can be utilized for the further effect of acquainting the public, from which our jurymen are drawn, with the fact that railroads are making serious endeavors to prevent crossing accidents.

A standardized form of crossing accident report, combining the best features of existing forms of such reports, and compiled at joint meetings of Mr. Rowe's

committee, a special committee of Committee IX, American Railway Engineering Association, and the Committee on Prevention of Highway Crossing Acccidents, Safety Section, American Railway Association, was submitted for the approval of the convention and adoption, if desired, by member roads.

Although not included in his regular report, Mr. Rowe also submitted figures, recently compiled, for crossing accidents in the first two months of 1930, as compared with the corresponding months of 1929. That these indicate a continued upward trend of improvement over the results obtained in 1929, is apparent from the following table:

	Jan.-Feb. 1930	Jan.-Feb. 1929
Highway crossing accidents	890	994
Highway crossing fatalities	320	403
Highway crossing injuries	1,054	1,088

Enforcement of Whistle Signals Is Effective on Louisville & Nashville

In concluding his talk, Mr. Rowe read a letter received by him from E. G. Evans, superintendent of safety of the Louisville & Nashville, stating that on March 1 of this year that road had inaugurated as a definite policy the giving of the crossing whistle in the following manner: Two long, one short and one long blast of the whistle, which last blast must end after the locomotive passes over the highway. Since that time, this policy has been rigidly enforced on all occasions, with the result that, in the 10 weeks between March 1 and May 11, the date of the letter, there was not a single crossing accident on the lines of the Louisville & Nashville.

Code of Ethics Recommended

A special committee on ethics, acting during the year under the chairmanship of C. S. Williston, claims attorney of the Pullman Company, submitted a resolution, from which the following paragraphs are quoted, which was adopted by unanimous vote of the convention:

We recognize that claim agency brings the policies of the corporations represented to the direct attention of the public and that, unless those policies are based on equity and fair dealing, the damage to such corporations is necessarily great therefore

Be it Resolved: That we, the Association of Railway Claim Agents, do take the initiative in the field of claim agency and hereby condemn any practice not based on fair dealing, and declare that the policy of our association is to countenance only fairness and the observance of law in all transactions, and

Be it Further Resolved: That a permanent committee on ethics be established, and

Be it Further Resolved: That this committee be directed during the coming year to prepare a short code of ethics dealing with the general principles of claim agency, both in its relation to the railroads and to the general public, for consideration at the next convention.

Association to Admit Electric Lines

The convention also accepted the report of the membership committee, (Gelmer Kuiper, general claim agent, Chicago Great Western, chairman) advocating that the association broaden its scope by amending its constitution so as to make eligible for associate membership claim men of "electric railways organized for the transportation of passengers and freight, each operating not less than 100 miles of road, with not less than two termini in separate states, subject to regulation by the Interstate Commerce Commission, and having physical connection and joint tariffs with one or more steam railroads."

Accident Statistics Analyzed

THE Safety Section of the American Railway Association, through the Committee on Statistics, T. H. Carrow, chairman, has issued a series of tables showing employees killed and injured (on duty) on Class I railroads in the year 1929, the distinctive feature of which is the inclusion of comparisons of the records, one road with another, on the basis not only of total killed and total injured, but also on the basis of total killed and total injured in each of the three principal departments; (a) maintenance of way and structures; (b) maintenance of equipment and stores; (c) train and engine service.

Under each of these heads seven tables are given in which the roads are divided into seven groups, according to the magnitude of the operations of the road. Group A consists of roads on which, during the year, 100 million or more man-hours were worked; Group B, between 100 and 50 million; Group C, 50 to 20; Group D, 20 to 10; Group E, 10 to 5; Group F, 5 to 2; Group G, less than 2.

In each group the table shows the rank of each road on the basis of total casualties per million man-hours. A typical table, that showing total casualties in group B, is reprinted below.

The totals of the group tables in the sheet which shows total employees, all classes, are as follows:

Casualties in Train Service and Non-train Accidents

Group	Total casualties, Employees on duty: Killed	Injured	Thousands of Man-hours	Casualties per million man-hours: Killed	Injured	Total
A	572	21,353	1,938,386	0.30	11.02	11.32
B	297	15,865	1,073,457	0.28	14.78	15.06
C	246	10,105	630,184	0.39	16.03	16.42
D	72	3,599	250,524	0.29	14.37	14.66
E	62	3,247	176,472	0.35	18.40	18.75
F	33	1,792	96,146	0.34	18.64	18.98
G	13	1,096	55,129	0.24	19.88	20.12
Grand Total	1,302	57,164	4,225,292	0.31	13.53	13.84

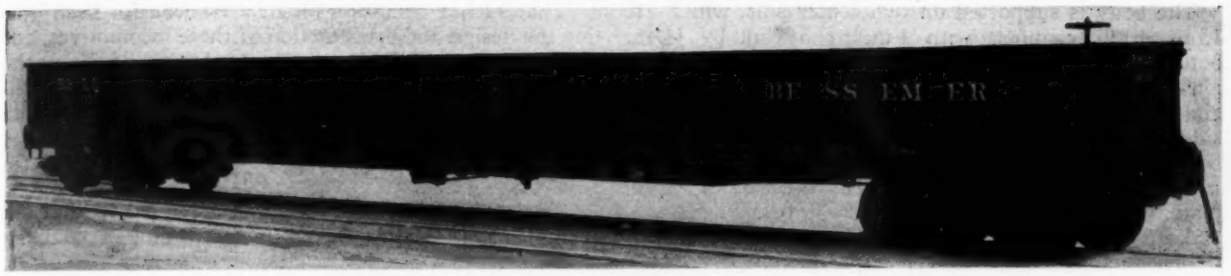
Group A contains 12 roads, Group B 16 roads, Group C 22, Group D 18, Group E 25, Group F 29, and Group G 44 roads.

The circular issued with the tables suggests that each road take stock of what its accidents cost it during the year 1929.

It is further suggested that each road or department of a road in which the casualty rates are higher than the average in its group, either in the fatal, the non-fatal or the total column, should set up arrangements to bring the rates down before the end of this year. And roads which already show better than the average are exhorted to intensify their efforts in every direction where the performance is comparatively poor.

Rank of Roads in Class B

Rank	Road	Total employees on duty: Killed	Injured	Thousands of Man-hours	Casualties per million man-hours: Killed	Injured	Total
B 1	U. P.	13	127	70,261	0.19	1.81	2.00
B 2	A. C. L.....	10	419	58,122	0.17	7.21	7.38
B 3	C.,C.,C.&St.L..	19	468	55,763	0.34	8.39	8.73
B 4	T. & N. O...	10	533	61,355	0.16	8.69	8.85
B 5	N. & W.....	13	601	63,581	0.20	9.45	9.65
B 6	Mich. Cent....	18	501	51,639	0.35	9.70	10.05
B 7	Gt. Northern..	29	774	72,475	0.40	10.68	11.08
B 8	C. & O.....	15	919	80,642	0.19	11.40	11.59
B 9	D., L. & W..	18	649	52,557	0.34	12.35	12.69
B 10	Nor. Pac.....	10	900	64,159	0.16	14.03	14.19
B 11	Mo. Pac.....	21	1,413	98,278	0.21	14.38	14.59
B 12	St. L.-S. F...	11	1,000	54,586	0.20	18.32	18.52
B 13	B. & M.....	17	1,150	51,443	0.33	22.35	22.68
B 14	N.Y.,N.H.&H..	25	2,017	79,974	0.31	25.22	25.53
B 15	Erie R. R....	45	2,342	85,239	0.53	27.48	28.01
B 16	Reading Co....	23	2,052	73,383	0.31	27.96	28.27
Total—Group B		297	15,865	1,073,457	0.28	14.78	15.06



Sixty-Five Foot Gondola Car Built for the Bessemer & Lake Erie by the Greenville Steel Car Company

Sixty-Five Foot Gondola Cars for the Bessemer

Purchased to haul long girders and other steel products of unusual length—Load capacity of 70 tons

THE Greenville Steel Car Company recently delivered 25 65-ft. gondola cars to the Bessemer & Lake Erie for handling steel mill traffic. These cars, which have a capacity of 70 tons, were purchased to avoid the use of two or more cars for hauling long steel, such as bars, beams, channels or girders. It is expected that the utilization of this equipment will save considerable expense both to the shipper and the railroad in the loading and blocking of long material, and also by releasing for other service cars frequently required for twin-loading and as idlers under overhanging loads.

These cars, which are known on the railroad as Class L2A and have been numbered 34001 to 34025, inclusive, have low sides and drop ends. The inside height is 3 ft. 6 in. and the inside length, 65 ft. 2⅛ in. The inside width of 7 ft. 8⅞ in. was adopted to lessen the side over-hang when traversing sharp curves. The cars are equipped with stake pockets secured to the inside of the side walls, as shown in one of the illustrations. Holes have been punched in the top side angles for bolting down lading, and in the floor near the body bolsters for bolting down blocking.

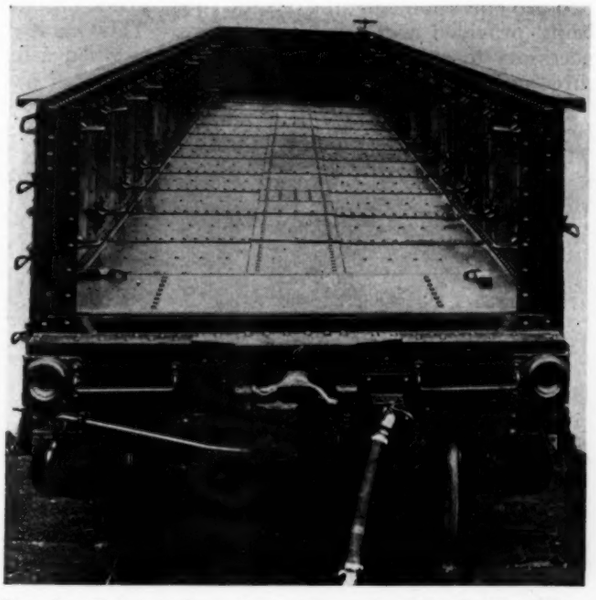
Dimensions of the 65-ft. Gondola Cars Built by the Greenville Steel Car Company for the Bessemer & Lake Erie

Inside length	65 ft. 2⅛ in.
Inside width	7 ft. 8⅞ in.
Inside height	3 ft. 6 in.
Length over end sills	66 ft. 10 in.
Length over striking plates	67 ft. 7 in.
Length over couplers	70 ft. 7⅛ in.
Width over all	8 ft. 6 in.
Height from rail to floor	3 ft. 8½ in.
Height from rail to top of sides	7 ft. 2½ in.
Extreme height	8 ft. 0 in.
Distance center to center of trucks	55 ft. 10 in.
Wheel base of trucks	5 ft. 8 in.
Journals, diameter and length	6 in. by 11 in.
Capacity	140,000 lb.
Load limit	140,000 lb.
Cubic capacity, level full	1,766 cu. ft.
Average light weight	68,744 lb.

Special provisions were also made in the design of the cars for movement around sharp curves, which frequently have to be traversed in steel-mill yards. Ample length of side bearing has been provided, and the trucks and foundation brake rigging have been designed to afford free movement while traversing curves. The side sills are notched out to clear the wheels when the car is traversing curves of short radius. The openings in the striking plates are 12 in. wide so as to allow ample side-movement for the coupler. The couplers have radial shanks with vertical keys. Provision has been made for applying horizontal keys in lieu of the vertical keys, to facilitate repairs in interchange.

The center and side sills are 2 ft. 1-11/16 in. and 2 ft. 5-9/16 in., respectively, above the top of the rails, which allows sufficient clearance for hump-yard operation.

The trucks are equipped with the Barber lateral motion device. They are of cast steel, and have rolled steel wheels with 6-in. by 11-in. journals.



Interior Construction of the Bessemer 65-ft. Gondola Car

The body is supported on two center sills, which are 15-in. 40-lb. channels with 4-in. by 3½-in. by ½-in. bottom flange angles. The sides are made of 5/16-in. plates with two 4-in. by 3½-in. by ½-in. bottom angles and a 5-in. by 4½-in. by 7/16-in. top bulb angle. The side and center sills are connected by 58 cross-members, including the end sills and bolsters. These cross-members support the floor, which is made of ⅜-in. plate. Each side is braced with 25 pressed steel side stakes, spaced 2 ft. 6 in. Other general data and dimensions are shown in the table.

Electric Pusher Locomotives Operated on Great Northern

By G. E. Baston

Railway Equipment Engineer, Westinghouse Electric & Manufacturing Company

WITH the initiation of electric operation on the Wenatchee-Skykomish section ot the Great Northern Railway through the Cascade mountains, operation of the freight trains continued on approximately the same plan as with steam locomotives. Immediately it was seen, however, that considerably increased tonnage could be handled with the electric locomotives by increasing the number of locomotives in the train.

The unusual flexibility of the motor-generator type of motive power unit employed, which makes it possible to handle both passenger and freight traffic with the same locomotive, enabled each passenger locomotive to make a trip as a helper locomotive on a freight train between each passenger run. To reduce switching, the regular two-unit helper and the unit from the passenger train were cut into the freight train at the same point. The fears that had been entertained by some as to the advisability of concentrating so much motive power at any point in the train have been proven groundless by many months of successful operation. As ordered and shipped, the original units were equipped for single two-cab operation only, the outside ends of each unit not being provided with control jumpers. This made it necessary to employ two locomotive crews when using three units together.

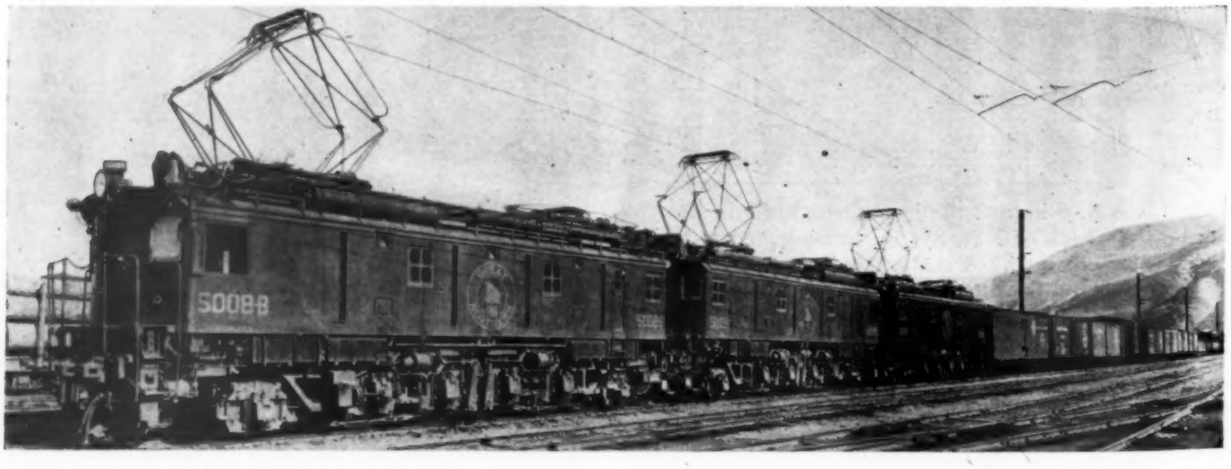
That such a condition might arise was foreseen during the design and construction of these locomotives, and provision was made for the later addition of the necessary equipment. It was decided later to install the necessary equipment for making six of these units suitable for operation as two 3-unit locomotives.

Electrical Control

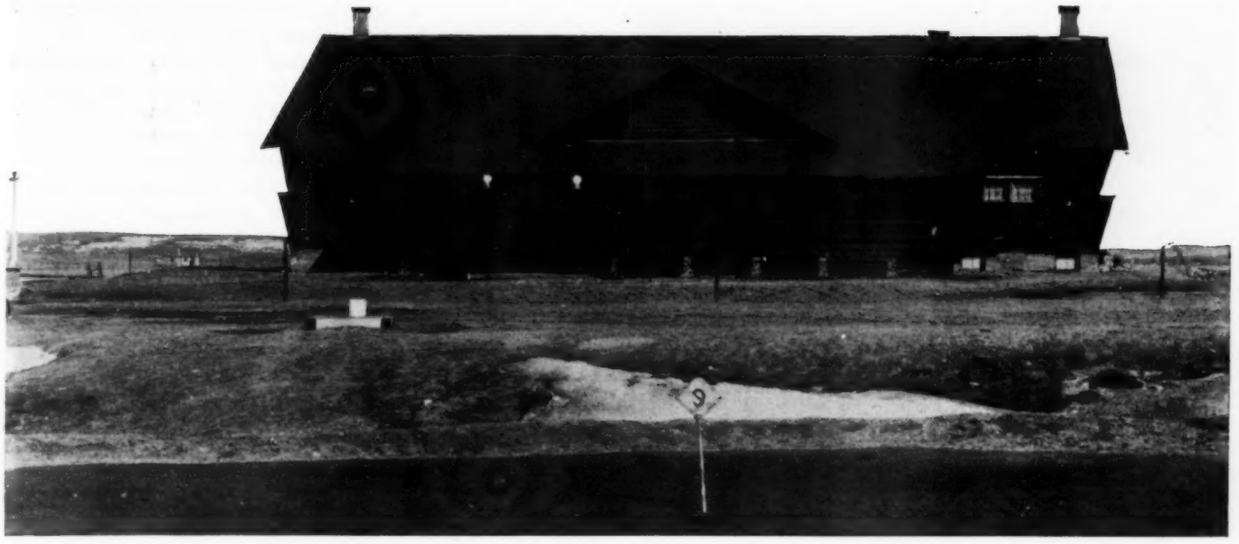
The electrical control has been arranged so that any combination of any three units, forming a complete locomotive, is practicable. A high-tension bus line is carried through all units so that any two of the six pantographs may be used. To keep the enginemen informed of conditions on each unit at all times, provision has been made to enable them to obtain indications of the current in the traction motor armatures and fields and the synchronous motor, as well as receiving a positive light indication of overload on any unit. The engineman also receives a continuous light indication of the proper operation of the blower motors in each unit so that the failure of any blower, with its consequent danger to equipment, is immediately brought to his attention. He can then take proper action to prevent loss of power which would otherwise automatically occur after the blowers had been stopped a predetermined length of time. The emergency control of the oil circuit-breaker in each of the three units is available to the engineman in the front operating compartment, as well as is the emergency trip control, which also is available to the fireman from any one of three positions in each unit. All of the foregoing applies even though any one of the three units may be shut down.

This arrangement of control, combined with a type of unit which is capable of exerting its rated horsepower over a wide range of speed makes it possible to adjust the capacity of the locomotive very closely to the requirements and affords the greatest possible economy of motive power.

ABANDONMENT OF THE ELECTRIFIED 20-MILE LINE from Cape Town to Simonstown is being seriously considered by the South African Railway Administration, according to reports from the Department of Commerce. Intensive motor coach competition and the high cost of electric current, which is supplied by another government department, combined to produce an operating loss of about £250,000, or well over $1,000,000, on the branch during the year ending March 30, 1930.



The Three-Unit Motor-Generator Locomotives Furnish a Large Amount of Power Over a Wide Range of Speed



Gray's Gables, the Laramie Club House, was Named After Carl Gray, the President of the Road

Union Pacific Athletics Developed Through Clubs

Employee and community enthusiasm make possible an expenditure of $60,000 a year

THE Union Pacific System Athletic League, which is an organization of all of the athletic clubs on the system, is a striking example of railroad organization, co-operation and association. The purpose of the league is to promote and control all forms of athletic activities among the employees, and to this end it oversees 15 senior and 5 junior track and field events in addition to baseball, golf, tennis, swimming, rifle and trap shooting, horseshoe pitching, and band contests. It also promotes an annual winter sports tournament, which includes bowling, basketball, billiards, soccer and football contests.

The work of the league, of which A. A. Hendricks, athletic director, is president, is accomplished through 52 clubs which have a membership of 18,000 employees or a large proportion of those who are eligible to participate in athletics. Each club elects its own officers annually, governs its own activities and provides its own facilities, which usually consist of an athletic field, a club house and equipment. Some of the smaller clubs have only baseball fields and tennis courts, while many of the larger ones own gymnasiums, swimming pools, golf courses, rifle ranges and trap-shooting grounds. At the larger points, such as Los Angeles, Cal., Salt Lake City, Utah; Pocatello, Idaho; Portland, Ore.; Laramie, Wyo., and Cheyenne; North Platte, Neb.; and Grand Island, Denver, Colo., and Kansas City, Mo., the athletic fields range in size from 5 to 13 acres.

Every year the league holds a system meet, the participants being chosen by eliminations among the clubs some time previous. Each of the latter holds contests in all events and the winners then compete in divisional meets, the purpose of which is to secure entries for a unit meet. Inasmuch as there are four units or railroads comprising the system, there are four unit meets. The winners of the unit meets then attend the system meet which serves as the climax of the athletic program.

The league had its inception in November, 1925, when there were 12 clubs on the system with a membership of approximately 1,500 employees. In 1926 this movement had grown to 25 clubs and 5,000 members, in 1927 to 34 clubs and 10,000 members; and in 1928 to 40 clubs and 16,000 members, while at present there are 52 clubs and 18,000 members. The development of facilities has also kept pace with the increase in membership. In November, 1925, there were no facilities of any kind at any point on the system, while at present the clubs have property of the various kinds listed above. In one year the clubs spent $60,000 for facilities, labor, equipment, supplies, etc., which amount was secured through dues, dances, entertainments, etc.

The work and enthusiasm of the employees as well as the communities is illustrated in the development of the club at Laramie, Wyo., which was opened on May 20, 1929, and where the club house, Gray's Gables, is named in honor of Carl R. Gray, president of the Union Pacific. This club is chosen for illustration because of its recent formation and because it reflects the spirit of all the clubs on the system. The story is told by George Bond, president of the Laramie club and a foreman.

"In 1926, in the infancy of the Laramie movement, little advancement was made. There was turned over

Knickerbocker Field of the Los Angeles Athletic Club

to the club by the previous administration $71 (less $25, covering an unpaid obligation). We had few enthusiasts, almost no one was willing to give a dollar even for a membership, and the employees could not be blamed because the club had nothing to offer—except a run-down natural golf course of nine holes. The problem of making a club out of nothing was hard to solve. The new president had able associate officers, ready and willing to go to work, but the question was where to start to bring a dead organization to life. Then the thought came—give them something for their money and create public and employee interest.

"Laramie has always shown strong interest in basketball and among our boys working here were a number of ex-high school students. So the first thing we did was to form a basketball team. Next we had to find a place for them to practice. Fortunately Coach John Corbett of the University of Wyoming has always been the U. P. boys' friend and was approached. Through his good offices we were able to use the University's basketball floor twice a week for practice. With no training, and with a small amount of practice, Laramie developed a winning team, beating Pratt's Bookmen, a famous Denver team, and the University of Wyoming, and later winning the Union Pacific unit championship in 1927 and in 1928.

"This at once created interest both among employees and citizens. Then the employees began to give us some financial support, but it was just enough to get by with each month.

Former Machine Shop Becomes a Gymnasium

"We found that the motor car shop, located in the old roundhouse, was to be vacated, and prevailed on the Union Pacific to lease this to us for use as a gymnasium. It was a sad-looking place, being dirty from the forges, and having earth floors, etc., and we had no funds. We asked the Union Pacific to sell us enough material to convert the shop into a gymnasium and this was very readily arranged. Our men cleaned the place and laid 8,000 ft. of flooring. Although the building was somewhat ill-shaped, it made a good gymnasium and did away with further worries in regard to gymnasium activities.

"After the floor was put down we started Saturday evening dances which paid us quite a nice sum. Then there was installed an up-to-date indoor rifle range, a duplicate of the range at the University of Wisconsin, made from its blue prints.

"A little money was coming in as a result of renewed employee interest, and we associated with the National Rifle association, whereby we were able to secure without cost, except for freight, material, as well as ammunition, from the United States government.

"The next requirement was stationary gymnasium equipment. We had to have money to buy equipment. So a meeting of employees was held and we asked our folks to give us a certain amount of money, payments to run on a monthly basis over a period of twelve months, by deduction or otherwise. They did it. Consequently, in five months, our gymnasium equipment was paid for and the Union Pacific was also paid for the material we had bought from it. The total investment in the gymnasium now amounts to nearly $2,500, which includes the cost of the new floor.

Making a Picket Fence Produce Needed Cash

"Then we began to realize the necessity of a regular financial income. Around our athletic field was a picket fence. This faced a main traveled highway so we asked the Union Pacific management to let us fill in the open spaces, and use it for advertising for the benefit of the club. The management consented. The shopmen filled in the openings and we sold the advertising spaces to Laramie business houses. This fence provides us with an income of nearly $1,000 a year.

"Then came the thought that if we are going to develop our young men we must have still more money. Already the young men were doing track and field work. There was everything to buy for them—suits, and necessary equipment were needed. So the officers of the club agreed to take in associate citizen members at a nominal rate and to make the club useful to them by renovating the golf course, by building tennis courts and by giving them all the privileges our Union Pacific men had except those of voting and holding office.

Citizens Gladly Join the Club

"By a lot of personal solicitation, this succeeded. We made the golf course playable, built two tennis courts—we already had, of course, the rifle range for small bore—started a business men's course in setting-up exercises, volley ball, calisthenics, boxing, wrestling, and so on, at the gymnasium. In this way we really had something to offer all of them for their money, something that they really desired, and in so doing we succeeded materially in promoting good will towards the Union Pacific and its employees. The number of associate members eventually increased to 250.

"Last spring it was suggested that there was need for a recreation place for employees and the community alike—men, women and children—so we decided to build a club house, to construct a large bore rifle range, improve the golf course adjoining the proposed club house grounds, and build tennis courts, archery courts, croquet lawns and playgrounds for the children of the members, and in fact, to make provision for everything in the line of clean recreation. For the older men, golf, horseshoe pitching, etc., were arranged; for the younger men, the more strenuous activities. Also, a big sand pit for the small children and a playground for the older ones were in the plan. This is all practically accomplished today.

"To bring this about we first secured four acres of ground. We expected to purchase this, but owing to the generosity of one man, we acquired the land without cost. The four acres were given by William Isberg, now our caretaker, and were located in a most favorable place, directly adjoining the golf course. The course, incidentally, is on land owned by the Union Pacific and has been leased by the club for its present use.

"The view from the club house is magnificent. It overlooks the city of Laramie to the west, with the mountains of Colorado and the Snowy Range of Wyoming lying out beyond in full view, in all their beauty and sublimity.

"The club was also able to buy an additional eighty acres of land adjoining the golf course and club house ground for possible future development. This piece of land was leased out by the club to a man for use as a commercial airport, it being in the direct pathway between Salt Lake City and Cheyenne. This 80-acre tract was obtained at a cost of only $5 an acre, a very favorable figure, and of the total purchase price of $400 only $100 yet remains to be paid.

"The work of building the outdoor rifle range was undertaken in co-operation with the National Guard. Blue prints were obtained from the War Department of the range at Fort D. A. Russell, near Cheyenne, and a duplicate of this fine range was built not far from the four-acre club house site. The total cost of the range was about $2,000, and was divided equally between the Laramie Union Pacific Athletic Club and the National Guard. Ammunition is obtained from the United States Government for use on this large range under the same arrangements as those made for the small bore indoor range.

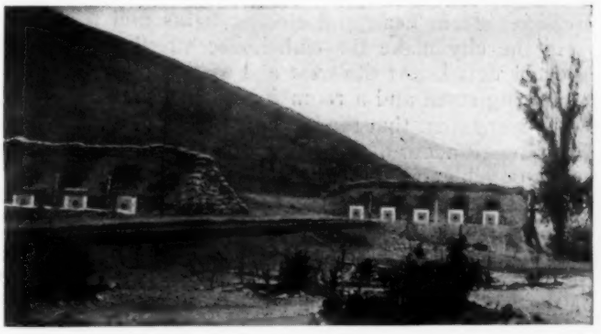
Then Came the Club House

"It was decided to make the new club house of rustic design. Arrangements were therefore made for several carloads of logs, to be brought from the mountains west of Laramie. Except for the flooring, the roof and the floor joists and beams, the club house was built entirely of these logs.

"We knew that we would need an adequate supply of water and as the club house was located about two miles from town, this meant that we must dig our own well. An opportunity to buy a well rig for only $175 presented itself, and we bought the rig, although some of our people questioned at the time whether it was the wise thing to do. Since we finished using it for digging our own well, however, we have been able to rent the rig much of the time, and in the last seven months it has earned about $400.

"One of the most important undertakings was the construction of a road from the Lincoln highway past the golf course to the club house site. This road is a mile and a half long and was broken out of open prairie. The heavy work was done by a large machine, and other work by a small grader which had been abandoned

The Lounge Room at Laramie Is Inviting



The Rifle and Pistol Range of the Los Angeles, Cal., Athletic Club

by the state highway department and which our boys at the shops were able to repair and put in good working condition.

"A number of decorative street lamp standards which were no longer needed by the city of Laramie were obtained and set up along the road for a short distance approaching the club house.

Club House is Imposing Structure

"As it stands now, the club house is an imposing building made of logs that have been so carefully fitted together that plaster chinking was not required. Steel bolts and heavy steel braces give it an appearance and reality of firmness. Even the window frames have been made from logs.

"The beams that support the roof are of logs put together in bridgework fashion, thereby giving an effect of great height and breadth to the main central room. Maple flooring was used both on the main floor and in the basement.

"The building is 64 ft. x 96 ft. in area. A broad porch running along the south, is reached by steps that begin under a decorative archway. From the porch, entrance is directly into the main room, which stretches over nearly three-fourths of the length of the building. To the left, which is the west end, are three rooms—a locker room for equipment, a wide room with a large fireplace, and a women's rest room. Stairs also lead down to the men's smoking room and to the dining hall.

"To the right, a wide arch reveals another long room which contains a soda fountain, several booths, and a second great fireplace. The trusses for the roof eliminate the necessity for any supporting pillars over the whole expanse of floor.

"The booths and the back-bar for the soda fountain are made in a decorative rustic style. The natural color of the bared logs has been varied in short streaks by artful adzing, giving flecks of a color lighter than the body of the wood beneath.

"At this east end of the building, back of the soda fountain, is the kitchen, equipped with large sinks, locked cupboards and a roomy range. A dumb waiter connects the kitchen with the dining room downstairs.

"The basement runs the full length of the building and, like the upper floor, it is divided into three main sections. In the center runs a spacious room of almost the same size as the main one above, which is to serve as a dining or assembly hall. To the west are rooms for men and women, including shower baths and dressing rooms for each. The furnace room and an automatic water system are also located here. The modern sewerage system and running water, under constant 40-lb.

pressure, steam heat, and electric lights and telephone from the city make the club house strictly up-to-date in every detail. At the west end of the lower floor are a smoking room and a room for the caretaker.

"It is apparent that the building of the club house and the bringing about of the many other developments was made possible only by the thoroughly interested and continuous co-operation of officers and members of the club, as well as of many local peoople not in the employ of the Union Pacific. The conception of the building, the designing of it, the carpenter work, the installation of the heating plant, the plumbing, the electrical work and the numerous other details involved were contributions from many of our members. Yet they were all paid for, there being no donation of labor. It was our determination to pay our way, and employees who expended their effort in any way on the job were paid the same as other workers.

"We now own assets conservatively estimated at $40,000, with an indebtedness of $13,000. We have an estimated annual income from members' dues, the advertising on our fence, our well rig, rentals on the new building and dances, of approximately $8,000 a year for the support of the club and the payment of its indebtedness. Dances net us at least $50 and they are given once a week. The club house is rented to fraternities and other local organizations and individuals wishing to give entertainments. It has become a very popular place already.

"The actual cost of the club house itself was between $18,000 and $19,000, and every bit of work done by members was paid for by the club. Through the kindness of several business houses, material for parts of the building was obtained at very favorable prices. A trap house is now being built near the club house for clay pigeon shooting.

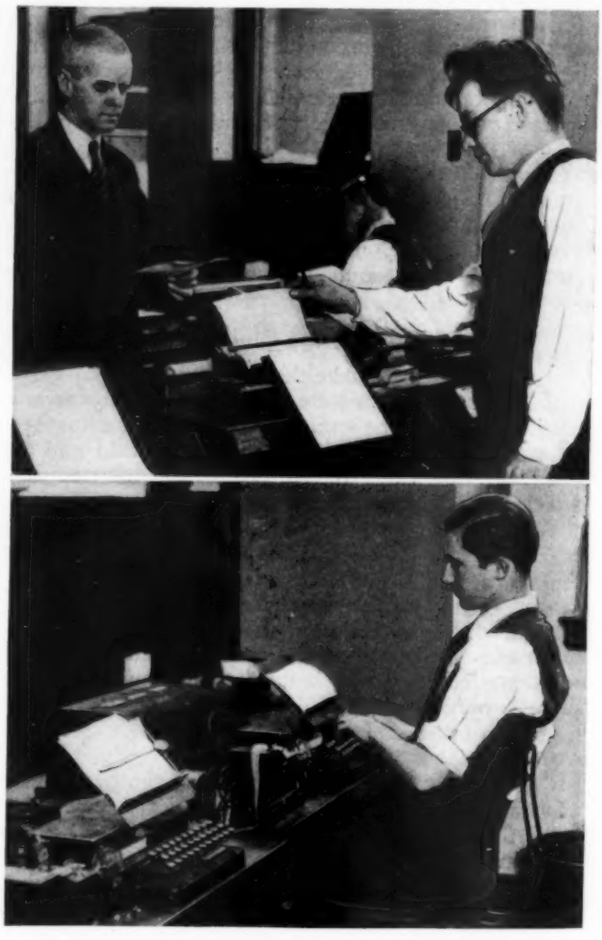
Message Traffic Handled by Printers on Pennsylvania

SINCE December, 1929, all message traffic handled through the Chicago telegraph office of the Pennsylvania to 10 important offices on the Western region and also to other points on the system, including Pittsburgh, Pa., Philadelphia and New York, and involving the exchange of about 160,000 messages per month, has been handled by automatic printers without the use of Morse telegraph. The Pennsylvania's Western region general telegraph office in the Union station, Chicago, is thus believed to be the first important railway point completely to eliminate telegraph service for the sending of messages and reports relating to railway operations and to substitute in its place an automatic printer system. The telephone system has been retained for train dispatching.

In 1925, when the transmission was principally by Morse telegraph, 36 employees were required to handle 135,000 messages per month. At the present time, with complete automatic printer operation, a force of 27 employees are able to care for a message traffic 19 per cent greater than that handled five years ago. The transmission speed of the printers is greater than that attained by the use of telegraph or telephone, and over composited circuits they can maintain a speed of 45 words per minute or an increase of 30 per cent over the average obtainable by Morse telegraph operation.

The printer system has proved to be entirely reliable and has shown that it will function under adverse conditions that would interfere seriously with the Morse telegraph service. As a result, additional page printers are now being installed to connect yard and terminal offices with their respective division headquarters and they will be employed in handling train consist reports. They are expected to result in a reduction in delays in yard service and economies in yard operation.

The printer equipment consists of Teletype No. 5-D duplex terminal sets and No. 12 sending or receiving units. The printer circuits are operated on a full duplex basis. The circuits are arranged for perforated tape



Top—Messages Are Torn Off and Delivered as Soon as Received. Below—A Tape Record Is Made of Messages Being Sent

transmitter sending, with the exception of the circuits between Chicago and Logansport, Ind., Toledo, Ohio, and Grand Rapids, Mich., which are arranged for perforated tape transmission from Chicago and direct keyboard transmission to Chicago from No. 12 type printers at the points mentioned. With the exception of the circuits to Philadelphia and Pittsburgh, all other circuits are concentrated in jack boxes at Chicago so that one perforated tape transmitter can be switched to any circuit terminated in any one concentration unit. The points, in addition to those already mentioned, with which the Chicago telegraph office has printer connection are Detroit, Mich., Fort Wayne, Ind., Indianapolis, and Terre Haute, Columbus, Ohio, and Cincinnati and St. Louis, Mo.

Co-ordinated Container Service on the Great Western

Optimism Prevails as

Tide Turns for British Railways

After seven lean years since the amalgamations, 1929 saw decline in revenue checked and far-reaching developments launched

By W. H. Fraser, M. Inst. T.
Publicity Agent, Great Western Railway

SINCE the 1922 amalgamations of the British railways seven lean years have been experienced, but the optimism which prevails today clearly indicates that the turn of the tide has set in. Nineteen hundred twenty nine has been the turning point. The decline in revenue has been checked; far reaching developments have taken place and the whole industry is imbued with a new spirit of keenness, enterprise and optimism which has its foundations in:

1—The remission of the passenger duty (i. e., excise tax).
2—Effects of the de-rating scheme and the resulting increase in export coal trade and carriage of heavy freight.
3—Co-ordination of rail and highway services.
4—Operating economies effected.
5—Public interest in the railways.
6—Unemployment plans.

Remission of the Passenger Duty

Since 1832 the British railways have paid a tax, either on the number of passengers carried or, as in recent years, two per cent on first and second-class fares in a specified urban area and five per cent elsewhere. It was a relic of the early days of railways, and in 1928 when a deputation waited on the Chancellor of the Exchequer he agreed to repeal the duty from April 1, 1929, on condition that the capital equivalent—£6,500,000 ($31,655,000) be spent in the development and modernization of rail transport. The plans adopted by the railways included the extension of electrification on suburban and main lines, new locomotive purchases, provision of large classification yards and improved freight terminal facilities, further modernization of railway docks, strengthening of bridges, widening of lines in congested areas and passenger station reconstruction.

Effect of the De-rating Scheme

On December 1, 1928, that portion of the Government's de-rating scheme applicable to the railways came into operation. The railways were relieved of three-quarters of their local taxation, amounting to £4,000,000 ($19,480,000) per annum and the resultant saving was passed on to railway patrons in the form of rebated freight charges on coal for export and blast fur-

naces, iron ore, limestone and raw materials of steel making, agricultural manures and feeding stuff. Aid was thus given to the basic industries and increases in both freight tonnage and receipts were recorded by all railways; in the cases of the Great Western and of the London & North Eastern the increase was sufficient not only to wipe off the deficit due to declining passenger revenue but it resulted also in augmented revenue of £635,000 and £1,355,000 respectively for 1929.

The decrease in passenger receipts was due to the enormous increase of cheap fares and a large decrease in ordinary fare passengers.

As a result of the order issued by the Minister of Transport regarding docks, charges at the South Wales ports and the Dock de-rating provisions of the Local Government Act of 1929, the tipping and weighing charges on coal were reduced from 7¼ d. per ton as from October 2, to 4¼ d. for coal shipped from 20-ton cars and 5½ d. for coal shipped from 10- and 12-ton cars. The South Wales docks alone record an increase of nearly 3,500,000 tons in the export of coal and coke in 1929 over 1928, and the prospect of an early and continued revival in this area is intimated by Italy's undertaking at the Hague to purchase annually for the next three years 1,000,000 tons of coal for use on the Italian State Railways, most of which will come from this area. Prior to the Dawes agreement Britain annually exported 3,000,000 tons to Italy, chiefly from Wales. A further stimulus was given to the heavy industries by the partial use of steel ties in all parts of the country.

Comparative Statement of Passenger and Freight Revenues, 1928-29

Railway Company	Passenger Receipts Decrease Compared with 1928	Freight Receipts Increase or Decrease Compared with 1928	Total Increase or Decrease Compared with 1928
G. W. R....	— $1,426,900	+ $4,519,400	+ $3,092,500
L. M. S....	— 5,431,000	+ 2,430,100	— 2,999,900
L. N. E....	— 2,746,600	+ 9,345,500	+ 6,598,900
Southern ..	— 954,500	+ 545,400	— 409,100
Total	—$10,558,200	+$16,840,500	+ $6,282,300

Justified Optimism

On May 6, 1929, the Railway Rates Tribunal met to review the standard and exceptional charges brought into force on January 1, 1928, after the first complete year's operations which ended on December 31, 1928. Despite the fact that the rates fixed by the Tribunal had failed by £9,057,732 to come up to the authorized "standard" revenue of £50,057,847 the railways intimated it was not their intention to propose any general increase in charges at the present time. Operating results have since improved.

Co-ordination of Rail and Highway Services

Within 12 months of the announcement of the first rail-road agreement following the passage of the Railways Road Powers Bill of 1928, the railways had reached working agreements with practically all the principal highway passenger operators in the country. The agreements comprise:

1—Pooling of highway passenger services in given areas and the formation of new companies in which the railways hold 50 per cent interest.
2—Purchase outright by railways of highway undertakings.
3—Agreements with municipalities whereby the municipalities retain sole control of the intramural motor coach routes, the railways and municipalities jointly operating the short distance routes and the railways the long distance routes.
4—Co-operation in the co-ordination of rail and highway services by the railways with road undertakings whereby the railways agree not to compete with the highway passenger services operated by the road companies within specified areas.

The public thus retained the facilities to which it was accustomed, cut-throat competition was eliminated and virtually a guarantee secured that no service should be run at a loss in order to protect patronage

In other directions the railways continued to expand. Unremunerative branch lines were closed and road motor services substituted, while in the passenger road services operated by the railways themselves the most up-to-date and luxurious motor coaches were introduced.

Highway Freight Services

On the freight side the railways continued to operate and extend their own highway service, until there is now hardly a square mile of territory which is not covered by town or country motor truck services. The latter operate within 12-15 miles of rail-heads, thus affording outlying country and agricultural districts direct communication to and from the big industrial centers and markets.

Operating Economies

One of the principal features of 1929 was the operating economies effected, including the voluntary wage reduction of two and one-half per cent on the part of the whole of the railway staff from directors to lamp boys; the reduction amounted to just under £3,000,000. It is to be restored on May 12, after being in force for nearly two years.

Public Interest in the Railways

The considerable discussion which preceded the granting of road powers to the railways brought them prominently before the public, interest in them was reawakened and their value to the nation more fully realized. The press of the country dealt very fully and favorably with the subject and it became one of the factors in the program of each party in the general election of May, 1929.

Government Unemployment Scheme

The new government shortly after it re-assembeld announced its intention of voting £30,000,000 for the purpose of relieving unemployment and the railways were asked to submit a list of proposals designed to achieve this end. In November the first list of approved works was made known, involving an expenditure by the railways of £7,000,000. These schemes included the partial or complete rebuilding of important passenger stations, doubling or quadrupling of lines in congested areas, modernization and construction of engine houses, repair shops and freight terminal facilities, new and enlarged classification yards, electrification of suburban lines and the extended use of steel ties.

By January 1, 1930, considerable progress had been made with many of the schemes while further plans involving the expenditure of millions of pounds were awaiting approval.

Air Powers

In April, 1929, after only one-and-a-half days' hearing, the committee appointed by the government to inquire into the railway application for air transport powers unanimously decided to pass the preamble of these measures and on May 10 the bills received the royal assent. In evidence it was shown that high class long distance rail travel was becoming liable to competition from air service as had been short distance

traffic from road transport. The railways have not yet utilized these powers.

Extension of Cheap Facilities

The year 1929 saw further extension of cheap passenger travel facilities. These became effective on January 1 and included the raising of the age limit from 12 to 14 for children carried at half-fare rates, the introduction of mid-week long-period excursions in addition to the period excursion facilities, and the issue all year-round of the week-end tickets. The minimum number of persons necessary to obtain cheap fares for pleasure parties, guaranteed special trains or parties traveling in connection with conferences was considerably reduced, while for the business firms qualifying for traders' tickets a system of bulk travel covering 10,000 miles was introduced, and books of vouchers issued for the use of firm members or employees traveling strictly on the business of the firm. The rates quoted represent a saving of 23 per cent and 20 per cent on the ordinary first- and third-class fares. By this policy there was a considerable increase in the number of passengers carried during the year.

A 66-M. P. H. Train

On all railways there was a general acceleration of passenger services. On the G. W. R. the Cheltenham Spa Express was retimed between Swindon and Paddington (London) thus becoming the fastest "start to stop" express in the country and possibly in the world, the journey of 77¼ miles being accomplished in 70 minutes at an average speed of 66.2 m.p.h.

Within a few days of the close of the year the L.N.E. and L.M.S. each brought into service an experimental type of locomotive which created great interest because of its departure from conventional practice. The L.N.E. locomotive is of the 4-6-4 type and unique in outward appearance on account of the stream-lined boiler and apparent absence of smokestack. It is the largest passenger locomotive so far constructed for service in Great Britain and the first tender locomotive of the 4-6-4 type to be introduced into the country. It is fitted with a Yarrow Gresley water-tube boiler having a working pressure of 450 pounds per square inch, the four cylinders working on the compound principle.

The new L.M.S. locomotive is also of the high pressure type, the design incorporating 900 lb. and 250 lb. per square inch double pressure boiler and three cylinders operating on the compound principle. It is of the usual 4-6-0 L.M.S. type. It is understood that one of the principal objects in the design of these two locomotives has been economy.

Freight services have been considerably speeded up with the result that there are hundreds of freight trains running each day at high speeds up to 40 m.p.h. over long distances. Each railway issued timetables showing the latest time for the dispatch of and arrival time of freight at destination points all over the country. The use of unit freight containers was also considerably extended, over 2,500 now being in daily use.

Electrification

In September, 1929, a committee was formed upon the instigation of the Minister of Transport to inquire into the question of the electrification of the main line railway systems.

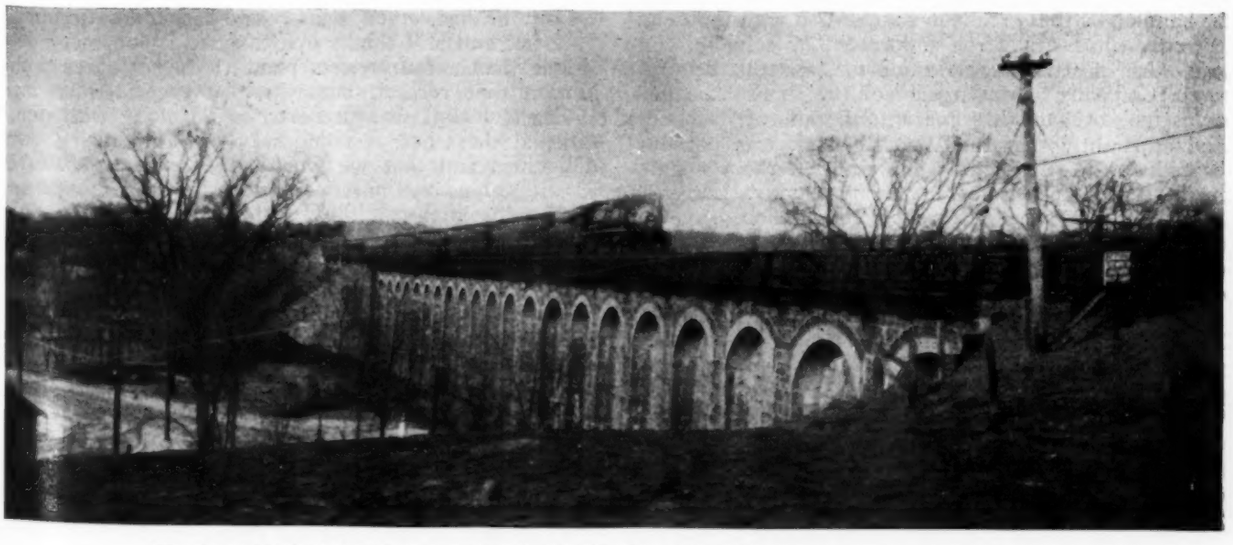
The terms of reference were:

In view of the progress which is being made towards widespread availability of high tension electrical energy to examine into the economic systems of Great Britain with particular reference to main line working and to report their conclusions.

It was not intended that the appointment of this committee should in anyway interfere with or delay any particular schemes of suburban or other electrification which may be otherwise under consideration By December 31, 1928, there were 1,324 track-miles of electrified railways in Great Britain. In March, 1929, the Southern completed its £11,000,000 suburban electrification project of 875 miles of track, all of which is on the d.c. third rail traction principle, and shortly after authority was given for the conversion of a further 50 miles of track at a cost of £600,000 to be completed during 1930.

A NEW UNION STATION was officially opened at Goteborg, Sweden, on May 15, according to Department of Commerce reports. It will be utilized by the Swedish State Railways, the Bergslagernas Railroad, the largest private railway in Sweden, and the Goteborg-Boras line, all of standard gage. The Vastergotland-Goteborg line, of 35-in. gage, is planning to build a new station of its own in the immediate vicinity.

* * * *



The New York, New Haven & Hartford's "Yankee Clipper" on the Canton, Mass., Viaduct

Pennsylvania Clayton Act Hearing

President Atterbury outlines position of Pennsylvania with relation to grouping of eastern roads

WASHINGTON, D. C.

MOTIVES which actuated the Pennsylvania in acquiring stock of the Wabash and Lehigh Valley in 1927 were outlined by Gen. W. W. Atterbury, president of the Pennsylvania, on May 23, at the hearing before Commissioner B. H. Meyer and C. V. Burnside, assistant director of the Bureau of Finance of the Interstate Commerce Commission, on the commission's complaint against the P. R. R. and the Pennsylvania Company charging violation of the Clayton anti-trust law. General Atterbury explained the purchase of stock as designed to protect the Pennsylvania's interest in the eastern transportation field and at the same time as an investment which seemed to offer no chance of loss. In the event of the adoption of a four-system grouping of the eastern roads, (which he preferred to the five-system idea originally proposed by L. F. Loree, president of the Delaware & Hudson and later approved by the commission in its consolidation plan) it would enable the Pennsylvania to round out its system along lines which it had long considered, he said, and if the five-system plan should prevail the Pennsylvania would either have an interest in the fifth system or stock that some one would "have to pay roundly for." Much of the Wabash stock had been purchased originally for the interest of the Delaware & Hudson, but after it seemed that the opportunity for the fifth system had passed the Pennsylvania had taken it over.

General Atterbury, as well as other Pennsylvania officers who had testified, insisted that nothing had been done to exercise the slightest degree of control over the Wabash and Lehigh Valley or to eliminate competition in any way. The case for the "prosecution," as put into the record by W. H. Bonneville, director of the Commission's Bureau of Inquiry, through subpoenaed officials of the Wabash and Lehigh Valley, had consisted mainly of a showing of the extent of traffic handled by these roads in competition with the Pennsylvania which "may" be suppressed by common control. An effort also was made to show the Pennsylvania Company as an "agent" of the P. R. R., which owns its stock and has guaranteed some of its bonds, and apparently that the Wabash stock was not purchased for its dividends. General Atterbury's statement, together with the testimony of Mr. Loree on May 21 as a witness for the commission, gave an interesting first-hand account of some of the strategic activities of the eastern railways since the publication of the commission's tentative consolidation plan in 1921.

General Atterbury began his testimony by saying he is also president of the Pennsylvania Company, which, he said "makes investments directly or indirectly in the interest of the Pennsylvania Railroad." He referred to the conferences among the executives of the eastern roads after the hearings on the commission's tentative consolidation plan in the hope of being able to adjust their relations to each other so as to submit to the commission a four-system plan which would minimize so far as possible the difficulties in the way of consolidation as developed in the tentative plan. The Nickel Plate had acquired an interest in the Chesapeake & Ohio and was working on the Erie and Pere Marquette. The New York Central wanted one of the lines between Buffalo and New York, preferably the Lackawanna, the Baltimore & Ohio wanted the Reading and the Wabash and the Pennsylvania wanted the Lehigh Valley to round out its system.

The Pennsylvania had felt it should have a line from the upper Susquehanna region to the Delaware and into New York and from the vicinity of Harrisburg across to the Delaware; a line along the south shore of Lake Erie to connect its north and south lines, certain trackage rights to improve its connections between Detroit and St. Louis and a line from Chicago to St. Louis. In the discussions it developed, General Atterbury said, that the N. Y. C. was unwilling to give up its interest in the Reading unless assured of complete control of the Lackawanna or Lehigh Valley; also that neither the N. Y. C. or the Nickel Plate would give the Pennsylvania trackage along the lake shore or agree to permit it to build its own line when it thought necessary and that this "developed into a situation which was clearly a combination against the Pennsylvania" and culminated in the recommendation to the commission of the "three-party four-system" plan against which the late Samuel Rea, then president of the Pennsylvania, filed a protest.

About that time, General Atterbury continued, there was considerable activity in the stock of the Lehigh Valley, some of which was traceable to the New York Central; the B. & O. and Nickel Plate were attempting to get control of the Western Maryland and the Wheeling & Lake Erie; then Mr. Loree went into the market and was purchasing Lehigh stock, and the Pennsylvania "woke up one day to find that Mr. Loree had some 30 per cent of the Lehigh Valley and might block any four-party plan if he chose."

"But he had other ideas," said General Atterbury. "He felt and still thinks a fifth-system plan more desirable than a four-system plan. I do not agree with him in that respect, but when he suggested buying Wabash stock I was prepared to go along with him, satisfied that there was no way of harmonizing our difficulties and that we would have in the Delaware & Hudson as the parent company of a fifth system a friendly interest. That led to the agreement of February 15, 1927." A copy of the agreement, signed by General Atterbury, Mr. Loree and Otto H. Kahn, of Kuhn, Loeb & Co., providing for the purchase of Wabash stock in the interest of the D. & H., had been placed in the record at the opening of the hearing in connection with the testimony of Mr. Loree. The Pennsylvania was to exchange the Wabash stock it purchased for stock of the D. & H. but later it was agreed instead that it should take over the Wabash and Lehigh Valley stock purchased by the D. & H.

The Pennsylvania's Objectives

General Atterbury said the Pennsylvania's line from Buffalo to New York is circuitous and the Lehigh Val-

ley would give it a better one, while some construction in the vicinity of Harrisburg would give it a connection via the Lehigh Valley into the central Pennsylvania steel and cement district. The only alternative as a line into New York was the Central of New Jersey, which the New York Central was insisting on and which, he said, would give it four routes between Buffalo and New York to the Pennsylvania's one. Also the Lehigh Valley had always worked closely with the Pennsylvania and the latter had for years considered it as a desirable part of its system.

It is also important to the Pennsylvania to get a quicker movement between its north and south lines to Lake Erie and it would have been glad to extend farther west the arrangement with the Nickel Plate by which the tracks of the two companies are used for double-track operation. He said he had no doubt that the Pennsylvania would build such a line some time. Between Chicago and St. Louis, also, he said, the Pennsylvania has only a circuitous route handling relatively little traffic. The four-system plan proposed to allocate to the Pennsylvania the Grand Trunk line in the United States and the Chicago & Alton, but "one was impossible politically and the other impossible financially." He said he had conferred with the Canadian National people and had found that any attempt to purchase the Grand Trunk would stir up a political situation which would make it perfectly impossible, although the Pennsylvania had gone so far as to offer to furnish the money to provide needed improvements for the line. He had also endeavored to come to some understanding as to a purchase of the Alton but had found such a financial condition and so many controversies between the holders of its different classes of securities as to make it unwise to consider it further.

Value of the Wabash to the Pennsylvania

"It was clear to me," he said, "that I would get one of three things—either a large interest in a fifth system friendly to me or a large interest in the Delaware & Hudson which has always been one of our most valued connections, or a large interest in the stock of the Lehigh Valley, which has been one of our objectives for many years." General Atterbury said he was thoroughly satisfied that with the Delaware & Hudson as the financial backbone and the Wabash and Lehigh Valley as the physical backbone a fifth system could be put through and he believed it would be a successful and profitable undertaking, but that in any event he was safeguarded in three ways and there was every reason why he should have made the investment at the time from both the defensive and the financial standpoints.

He recalled how Mr. Loree had obtained an option to lease the Buffalo, Rochester & Pittsburgh and made an arrangement with the Pennsylvania for trackage rights to connect that road with the Delaware & Hudson but that the commission had denied the D. & H. applications and he said that "with the passage of the months it seemed that the opportunity for a fifth system had passed." He therefore had suggested to Mr. Loree that he sell him his Lehigh Valley stock and that Mr. Loree had suggested that he also take the Wabash stock, which had been bought for their joint account.

"It was clear to me that the Wabash would give me everything that the Grand Trunk and the Chicago & Alton would and if the four-system plan went through I would have saved myself a tremendous expense in acquiring the stock of these lines or that if the fifth-system plan were finally decided on, including the Wabash and Lehigh Valley, I would have an investment somebody would have to pay quite roundly for to develop the fifth system. There seemed no possible chance to lose."

The Delaware & Hudson at first wanted $85,000,000 for the stock, he said, but he had replied that he was not interested at that figure and finally was very glad to accept an offer for $62,500,000, acting in the name of the Pennsylvania Company "because it had the credit and the financial power and I didn't have to ask anybody except the board of directors."

No Exercise of Control

The idea of suppressing competition between the Pennsylvania and the Wabash and Lehigh Valley had never occurred to him, General Atterbury said, but he had thought and still believes that an alliance between them would result in great good to the public and also increase the value of the shares as an investment. Asked whether he had since sought to lessen competition between them through any instructions to subordinates or even by intimation he said: "I haven't even talked with them but once."

When W. H. Williams, chairman of the Wabash, had asked him if he was willing that he should go ahead with the fifth-system plan, he said, he had told him he was not concerned and advised him to do what he thought best for his stockholders. He said Mr. Williams had sent him a copy of the Wabash plan but that he did "not even look at it." Also President Loomis of the Lehigh Valley had consulted him once on a question as to that company's dividend and he had told him to do what he thought best. After those occasions neither had consulted him again regarding the affairs of their companies, General Atterbury said, except that he had conferred with Mr. Williams several times since the publication of the commission's consolidation plan. He added that the Pennsylvania had given its proxies to the managements of the other two roads and that its stock had not been used in any way to interfere with the policies of the companies or to make any changes among their directors.

General Atterbury was cross-examined very briefly by H. L. Underwood, attorney for the commission, who brought out that the Pennsylvania Company had raised the money to pay for Wabash and Lehigh stocks by the sale of interest-bearing securities.

What is a Good Investment?

Winthrop M. Daniels, professor of transportation at Yale University and formerly a member of the Interstate Commerce Commission, testified as a witness for the Pennsylvania that the purchase of Wabash and Lehigh stock was a good investment in the economic sense of that word. He spent about 40 minutes in discussing the results of a special study of the meaning of "investment", going back to the first instances of the use of the word in economic literature, showing that it includes the purchase of "the right to a remote income."

Mr. Booneville pointed out that the same theory had been advanced in the Wheeling & Lake Erie and Western Maryland Clayton law cases but that the commission had declined to follow it and had held that the stocks of those roads had been acquired for other than investment purposes. Professor Daniels said he was inclined to align himself with the dissenting opinion of Commissioners Brainerd, Farrell and Woodlock in the Western Maryland case. When Commissioner Meyer asked if he would recommend the purchase of Wabash and Lehigh stocks as the best investment for the

"Associated Investors of Australia" he replied that what might be a good investment for them might be a very wretched investment for people in this country, but in the position of the Pennsylvania this purchase might well have been considered the best investment for sixty million dollars.

Commissioner Meyer asked what reason there was for looking for additional motives in view of the practical situation faced by the Pennsylvania, and if it might not be that investment was not the dominant motive although what had been decided on for other reasons appeared to represent a fairly secure investment. Professor Daniels said that a good trading asset would be a good investment even if it did not currently pay dividends.

Competitive Relations

W. C. Maxwell, traffic vice-president of the Wabash, had testified that competition between the Wabash, Pennsylvania and other roads had been keener than ever during the past two years and described the Wabash as the "most strategic road" in the territory. He said all roads are now in a "scramble after business." J. L. Eysmans, traffic vice-president of the Pennsylvania, testified that at no time had the Pennsylvania attempted, directly or indirectly, to lessen competition between its lines and those of the Wabash or Lehigh Valley. Answering a question as to what he would do if General Atterbury had ordered steps to lessen competition he said he would have advised against it because such action would gain nothing but would be "ruinous" because of the shippers' reaction against the Pennsylvania.

Frank J. Fell, vice-president and comptroller of the Pennsylvania, put in exhibits analyzing those introduced by officials of the other two roads to show the extent of the competitive traffic. He objected to the classification of some of the traffic as competitive because it could have been handled via the Pennsylvania only at higher rates than via the other lines. Pressed by Attorney Underwood as to whether the Pennsylvania Company is an "agent" of the P. R. R. he said he did not understand that it is, but finally took the position that is a legal question. H. W. Bikle, general attorney of the Pennsylvania said that it had had difficulty in obtaining the Wabash exhibits for the analysis until after co-operative efforts by the Bureau of Inquiry.

J. R. Downs, chief of freight transportation of the Pennsylvania, described the improvements in freight schedules and service which had been made during the past two years.

* * *

The Twentieth Century Limited Along the Harlem River, New York

Short Line Railroad Has Operating Ratio of 57.5

ONE of the purposes behind the plan for general railroad consolidation was provision for the continuance in operation of weak railroads, among which would be included many of the short line properties. While such a centripetal policy might be the wiser for the solution of the problem of the short lines as a whole, a tendency in the opposite direction was noted some years ago in Northern New England, i.e., the segregation of short lines from the Class I parent company which formerly controlled them. The theory behind this reversal in the generally accepted policy was that the problem of the light traffic short line could be better met under strictly local control and close managerial scrutiny than if the line were operated as a part of a trunk line carrier. Instances of short lines which, to continue in operation, require the protecting arm of a strong trunk line parent are to be found. On the other hand, instances are not lacking of short lines which, under entirely independent operation, are able to make quite as satisfactory a showing, relatively speaking, as the average trunk line.

Table I—Operating Revenues and Expenses, 1928-1929

	1929	1928
RAILWAY OPERATING REVENUES:		
Freight Revenue	$306,808.14	$269,863.62
Passenger Revenue	12,005.73	18,709.84
Excess Baggage	108.37	235.48
Mail Revenue	48,907.00	10,634.90
Express Revenue	11,876.96	11,125.32
Switching Revenue	550.11	544.90
Special Train Service	838.00	450.00
	$381,094.31	$311,564.06
INCIDENTAL REVENUE:		
Station and Train Privileges	$5.78	$106.75
Storage—Freight	347.92	455.31
Demurrage	1,990.50	3,706.00
Miscellaneous	79.67	73.72
Total Operating Revenue	$383,518.18	$315,905.84
RAILWAY OPERATING EXPENSES:		
Maintenance of Way and Structures	$62,048.39	$61,324.16
Maintenance of Equipment	37,502.70	29,283.26
Traffic Expenses	9,281.76	9,569.79
Transportation Expenses	81,020.70	82,654.09
General Expense	30,813.32	17,704.09
	$220,666.87	$200,535.39
Net Operating Income	$162,851.31	$115,370.45

In the latter class falls the Atlanta & St. Andrews Bay. This line extends from connections with the Atlantic Coast Line and the Central of Georgia at Dothan, in the extreme southeast corner of Alabama, southward to Gulf of Mexico tidewater at Panama City, on St. Andrews Bay in western Florida—a total distance of 82 miles. There is also a connection with the Louisville & Nashville at Cottondale, Fla., 30 miles south of Dothan.

Gross earnings per mile of this line in 1929 averaged only $4,677. Nevertheless the operating ratio was only 57.54 per cent, divided as follows:

	% of Oper. Rev.
Maintenance of Way & Structures	16.18
Maintenance of Equipment	9.78
Traffic Expenses	2.42
Transportation Expenses	21.13
General Expenses	8.03
Total Operating Ratio	57.54

The favorable result obtained may be largely attributed to complete centralization of the road's entire management in the hands of one person—the executive vice-president and general manager. No authority to incur any expense is delegated to any one else. This officer, who is entirely familiar with the work of all departments, is enabled to exercise a personal super-

vision which on a larger road would have to be delegated to others.

Some two or three years ago a careful survey was made of every phase of the operation of the property down to the most minute detail. Every performance requiring labor or material was studied and methods were adopted which were calculated to perform such operations with the lowest possible expenditure of time and material. The same study was made of car movements in order to hold down per diem expense, and the average detention of foreign cars on line has been reduced from 3.8 days to 2.9 days per loaded car handled. A carefully worked out budget of operating expenses was made up, covering every single item of expense. This budget is closely watched by the operating officer to see that none of its items are exceeded. The operating revenues and expenses of the railway for the years 1929 and 1928 were as shown in Table I.

Traffic prospects for the current year and next year appear favorable, particularly because of the erection of a large kraft paper mill at Panama City, construction materials for which will provide a large traffic for many months to come.

Interviewing Prospective Employees

By Hal S. Ray

Director of Personnel and Public Relations, Chicago, Rock Island & Pacific

THE difficulties of building up an efficient, intelligent and loyal personnel are apparently increasing. Inventive genius and scientific development have opened many new fields, and a keener competition for the services of promising youth results.

Where it is practicable to establish centralized employment bureaus under the supervision of persons skilled in the subject, and operated on a modern scientific basis, the problems are less difficult of solution. But where the employment of help must be carried on by those who are charged with many other important responsibilities, the operation is apt to be a perfunctory one. It becomes a question of filling a given vacancy, with little or no thought of the capability, adaptability or probability of development of the applicant to meet the requirements of more important assignments to which his first employment should logically lead.

The subject is one deserving the utmost care. A distinct effort should be made to ascertain the qualities susceptible of development, possessed by the applicant, and his potential value in the future.

Interviewer Should Be Courteous

Courtesy and friendly interest should be evidenced in the contact in order to obtain the necessary information on the one hand, and to establish a respect and friendly regard for the institution on the other, regardless of what the outcome may be.

It frequently happens in the pressure of the daily duties of employing officers, that the matter of interviews with those seeking employment in the organization is not given the consideration and time which it really deserves. The task is more commonly delegated to an assistant who, while eminently capable in discharging his ordinary duties, may not be able to satisfy the inquirer and convey to him an impression of interested and courteous attention. The result is that the applicant often goes away either disgruntled or actively hostile toward the institution because he feels he has not been given proper consideration. It should be the aim of employing officers to create a favorable impression in the mind of anyone seeking employment.

Ordinarily, in such contacts, little thought is given to the effect produced upon persons applying for positions. The manner in which an interview is conducted with a prospective employee, especially the one who is not given employment, creates in him an impression either favorable or unfavorable. An attitude results which is friendly or unfriendly.

The man or woman out of work and seeking employment is usually in a more or less seriously disturbed state of mind. While the degree is dependent upon the urgency of necessity to procure the means of daily sustenance and shelter, there is a psychological susceptibility to lasting impressions.

If the individual who is not employed gains a favorable impression of his treatment during the interview, he will carry that feeling to his relatives and acquaintances. The consequent result is a friendly feeling toward the employer and toward the institution. In the same manner, but to an even greater degree, if the applicant has been treated curtly or discourteously, he will leave with a distinctly unfavorable remembrance of the organization and becomes a potential antagonist. It is therefore important that every employing officer should be in a proper frame of mind when interviewing applicants. If, for any reason, the examiner at the time of the conference is mentally perturbed, annoyed by some unfortunate incident, or pre-occupied with some other subject, it is far better that the desired interview be postponed until such time as he is in a receptive frame of mind, rather than create a detrimental opinion, both of himself and of the company.

"Third-degree" methods of interviewing applicants should be carefully avoided. They create doubt of sincerity and suspicion, and give rise to ideas in the individuals seeking positions that are antagonistic and detrimental to the best interests of the employer.

Courtesy should always prevail in dealing with applicants. The questioner should place the applicant wholly at ease. The person seeking service should be given a decided impression that the institution is one where all its matters are handled in a strictly business-like, but courteous, manner.

Don't Embarrass the Applicant

Direct questioning should not be pursued with a vigor or to a point which confuses or embarrasses the applicant, but a common talking point should be sought and the examination centered around it. Through a discussion of this nature, the interviewer should be able to secure all the desirable information which can be obtained by interview as to the characteristics and capabilities of the person seeking the place. It should be remembered that he is attempting to "sell" his service to the employer, and at the same time the employer should consider the situation not only from the position of a "buyer," but also from the point of view that he, at the same time, is selling to the applicant a certain definite thing—a favorable impression of his institution—and is seeking good will and friendly interest for it.

If in need of employees, and it is felt that the applicant is not doing himself justice during the interview, because of embarrassment or some other reason, rather than lose a good prospective employee it is better for

the examiner to end the conference and continue it at a later date, a comparison of the two interviews serving to aid in the final decision as to whether or not the applicant will be found a desirable person for the position.

If it is found desirable or necessary to reject the application, it should be done in a courteous and friendly manner, with frank advice to the applicant as to why it has been declined. If necessary, he should be given friendly counsel as to what he can do to correct any objections that in the interviewer's opinion serve to hamper his efforts to secure satisfactory employment.

Starting the Employee Off Right

Every man or woman who is given employment should be impressed with the importance of his or her work in its relation to the public service which the institution is organized to render. It should be emphasized on the day of employment to everyone who enters the service, no matter in what capacity, that his or her duties are of as much importance in making the organization efficient as are the duties of executive officers in their activities, and that everyone, no matter what the job, has a responsibility to meet.

A genuine effort to introduce a new employee into his or her job, to point out just what the job contemplates, the prevailing and accepted practice, obstacles to be avoided or overcome, and to extend a friendly welcome and helping hand during the trying period of "strangeness" will do much toward contentment, loyalty and efficiency.

The future attitude of the employee toward his fellow-employees, his employer, his job and the institution is materially affected by the impressions created and opinion formed in the early period of his employment.

Couzens Resolution in House Committee

WASHINGTON, D. C.

THE fate of the Couzens resolution, passed by the Senate on May 21, which proposes to curtail until next March the authority of the Interstate Commerce Commission over railway unifications and to establish a temporary law declaring unlawful the exercise of control over railroads by holding companies, is now in the hands of the House committee on interstate and foreign commerce, which so far has indicated no intention of holding hearings on it.

Question was raised during the debate on the resolution in the Senate as to whether its effect does not go far beyond what its various authors intended, by reason of a proviso inserted just before it was reported by the Senate committee, and whether it does not now attempt to declare unlawful the exercise of control by railroads over subsidiaries acquired before the commission was given jurisdiction over the subject by the transportation act of 1920. After the paragraph which declares unlawful the acquisition or exercise of common control of railroads, through holding companies or otherwise, not authorized by the commission, the committee adopted a proviso that the provisions of the paragraph "shall apply only to consolidations, unifications, and common control effected or exercised subsequent to February 28, 1920." Many instances of control effected before 1920 which were not in violation of law and which did not require commission approval have continued to be "exercised" since that date.

In passing the Couzens resolution the Senate adopted an amendment proposed by Senator Swanson, of Virginia, providing "that nothing herein contained shall suspend or prevent the approval and authorization by the commission of any acquisition or control of railroad properties commonly classified as short line railroads" and later another amendment proposed by Senator Glenn, of Illinois, inserting the words "steam or electric" before "railroad properties." Another amendment proposed by Senator Connally, of Texas, was adopted as follows:

"The commission shall approve no plan for the unification, merger, or consolidation of carriers or their properties, or the transfer or lease of the properties or franchises of any carrier or carriers to another carrier under this act which does not require the continued operation of general offices and shops at such places as they have been located under contracts for value, or under bond issue, or by law, or under judicial decree, unless such plan shall provide for full and adequate and continuous compensation for such removal, which compensation may be furnished by the permanent location and maintenance at such place of other offices or shops by the carrier, its successors, receivers, or assigns with as large payrolls as the facilities removed."

Representatives in Congress from seven northwestern states called on Chairman McManamy of the Interstate Commerce Commission on May 23 to inform the commission that they are opposed to the proposed Great Northern Pacific unification and that they desire to be heard before any action is taken in the case.

The Senate passed on May 22 without debate the bill introduced by Senator Hawes, of Missouri, in an effort to head off the passage of the Couzens resolution, by authorizing the Interstate Commerce Commission specifically to protect the interests of railway employees as affected by railway unifications. The bill would amend section (5) of the interstate commerce act by inserting between paragraphs (6) and (7) a new paragraph (6a) providing:

"In any hearing upon an application under paragraph (2) for authority to acquire control or under paragraph (6) for authority to consolidate, employees of any carrier involved in such acquisition of control or consolidation, or representatives of such employees, may intervene and be heard, and the commission is specifically directed to prescribe, in any order which it may enter approving and authorizing such acquisition of control or consolidation, such terms and conditions as it may find necessary or desirable, as a result of such hearing, to protect such employees against uncompensated injury resulting from anticipation or consummation of such acquisition of control or consolidation."

The bill had been favorably reported by the committee on interstate commerce after the original Hawes bill had been completely rewritten in accordance with suggestions made by the commission. A further amendment was adopted in the Senate, to meet the demand of Senator Couzens, inserting the reference to "anticipation." Donald R. Richberg, counsel for the railway labor organizations, had suggested such an amendment to prevent the discharge of employees in anticipation of reductions in force incident to unification.

TCHORNI, RUSSIA, is named in a press dispatch of May 21, as the scene of a collision between a passenger train and a freight on the Moscow-Kazan Railroad, in which 28 persons were killed and as many more injured.

Accident Investigations During September

FOLLOWING are abstracts of the reports issued by the Interstate Commerce Commission on its investigations of six train accidents which occurred in the month of September, 1929; five collisions and one derailment.

Boston & Maine, Shawsheen, Mass., September 14, 4:45 a.m.—An extra train, eastbound, consisting of two locomotives coupled together, without cars, Nos. 3682 and 3637, moving at about 25 miles an hour, collided with a westbound freight, moving at low speed, and all three of the locomotives and the first four freight cars were derailed and badly damaged. The engineman of 3682, the leading engine, was killed, together with his fireman; and the engineman, fireman and a flagman on 3637 were injured; also three employees on the freight train were injured. The light engines had entered the main line (from the Lowell line) at Lowell Junction, four miles west of Shawsheen, and were proceeding eastward on the westbound track without authority. There was a dense fog at the time. The signalman at Lowell Junction, on the approach of the light engines, lined the route for them to pass over the east leg of the wye intending to allow them to cross to the eastbound track before the westbound freight arrived. Before changing the switches of the crossover, he set the signal at caution, which would permit the light engines to enter the north main track but not to go beyond the interlocking limits. Realizing his mistake he then decided to allow the engines to proceed on the westbound main track as far as westbound signal 40, the interlocking limits, clear of the circuit, after which he would give them a signal to back up, and then have them make the crossover movement. After the circuit light in the tower went out, he heard the engines working steam, whereupon he picked up a lantern, left the tower, and ran towards the crossover in an effort to stop the engines, but was unsuccessful.

The report holds both engine crews and the flagman responsible. They should know that they had no right to proceed eastbound on the westbound track beyond interlocking limits without a train order. The surviving engineman said that he was depending on the leading engineman and also that he had been told by the flagman that they had authority for the movement against traffic. The fireman and the flagman appear to have assumed that the leading engineman had been given the right to proceed.

The report refers to extended inquiry about the examination of new men, and men for promotion, and generally to the knowledge of rules by the trainmen, and finds that examinations have not been sufficiently thorough and frequent. Running trains against the current of traffic has recently become common on this road, but the men who were questioned appeared to have indistinct ideas as to the rules regulating the practice.

The report says that similar unsatisfactory practice in regard to knowledge of rules was disclosed in connection with the investigation of a collision on the Boston & Maine which occurred on October 9, 1911; and the injunction then given is repeated: That the officials of the road should see to it that employees have a full and complete knowledge of the rules under which they operate. "It is not believed that the requirements of safety are fulfilled when employees are in the service for years without the benefit of periodical instruction and examination. * * * Instruction cars are in use, affording an opportunity for employees to be orally instructed, but attendance is not mandatory, and it is doubted that such a system is sufficient for the purposes of safety."

Northern Pacific, Sartell, Minn., September 15, 6:20 a.m.—This is a double track line, but for a section of 24 miles freight trains were being run against the current of traffic. Eastbound freight extra 1572 on the westbound track ran into the rear of extra 1509, within yard limits, and one conductor was injured. The fault is placed on the engineman of No. 1572 for not properly limiting speed within yard limits. He had been warned by torpedoes a good distance back, though these torpedoes had been placed by another train, not involved in this collision. The inspector believes, however, that the engineman was not given as much warning as possible by the fireman and brakeman on the left side of his engine, who had a better view than was to be had on the right side.

Delaware, Lackawanna & Western, Greendell, N. J., September 17, 6:31 a.m.—An eastbound extra train consisting of locomotive No 1192 and 24 empty express refrigerator cars, moving at about 30 miles an hour or faster, ran into the rear of a preceding freight, which was moving at less than 20 miles an hour, and four employees were injured. Engineman Walker of 1192 had run past distant and home automatic block signals set against him and also disregarded a yellow fusee, not far from one of these signals; and he was running at full speed through a double-track tunnel in which smoke from another train obscured his view. The collision occurred just after he had emerged from the tunnel and both he and the fireman testified that the first they knew anything wrong was when the locomotive struck the caboose of the preceding train. Walker had been eating his luncheon, and acknowledged that he knowingly passed the stop signal without seeing it (although he had seen the lower arm on that post.) He claimed that the fusee which he saw had burned down about three or four inches, indicating that the preceding train was from five minutes to seven minutes ahead of him. The inspector finds it difficult to believe that an engineman of 18 years' experience could have pursued this reckless course if he was in good physical and mental condition, yet Walker steadfastly maintained that he was awake and not sick or incapacitated in any way. The report calls attention to the need of automatic train control for cases like this, on lines averaging 48 trains a day, which was the number traversing this part of the road for several weeks prior to the collision.

Oregon Short Line, Nugget, Wyo., September 22, 11:45 p.m.—Westbound freight train extra 2553 which had just entered a long passing track and had stopped where the caboose was about 1900 feet from the east end of the track, was run into by a following locomotive, 2549, running backward, without train. The caboose of the standing train was demolished and a road foreman of engines, riding inside, was killed. The cause was the failure of Fireman Huggins of engine 2549 to maintain a proper lookout. The markers on the caboose showed properly; and the fact that they did show was mentioned as a reason why Huggins might have thought the caboose was on the main track instead of on the siding; but the inspector says that, nevertheless, the total failure of both engineman and fireman to see the markers is not explained. Also, the engineman's view being obscured because of the curve over

which he was traveling, made it obligatory for the fireman to notify him of any obstruction on the track. By the headlight on the tender of engine 2549 the caboose could have been seen a distance of 372 ft., even had no markers been displayed. The conductor and the flagman of the freight said that Huggins was on the deck of the engine; and if this was so, the fireman's failure is explained; and in that case, the engineman would be responsible because of his action in continuing the backward movement under such circumstances. Huggins had been employed with this engineman only three trips, but he had had 81 days' experience as a road fireman.

Chicago, Rock Island & Pacific, Clay Center, Kan., September 27, 1:55 a.m.—Eastbound passenger train No. 224, traveling at about 50 miles an hour, was derailed, and the third and fourth cars were overturned, though the engine remained on the rails. Twenty-four passengers and three employes were injured. The tender is believed to have been the first vehicle to run off. One rail was found to be one inch too low, after the accident, at a point a little distance back and the inspector believes the cause of the wreck is to be classed as uneven track; he thinks perhaps the speed was higher than 50 miles an hour. Other trains had passed over the road and nothing wrong was noticed but the roadbed, which is on a fill about 4 ft. high at this point, is on a slippery and shifting gumbo soil and the place in the track is one that has required a good deal of attention; though there had been no recent rain to cause suspicion at this time. The locomotive of this train was one of 4-6-2 type, weighing, with the tender, 232 tons; and the tender, holding 10,000 gallons of water, was nearly full. The records of tender derailments on the Kansas Division of this road disclose seven others at comparatively recent dates, all of which involved tenders of the convertible Vanderbilt type, the same as this one; and six of these seven derailments were due to track defects. There are other places in this vicinity where the underlying soil is slippery and shifting; and, says the report, the accident emphasizes the necessity of more vigilance in track maintenance.

Pere Marquette, Petoskey, Mich., September 27, 4:56 p.m.—Locomotive No. 82 drawing one caboose, moving south, started from Petoskey, where according to an order duly received, it should have waited until 5 o'clock, and while running at good speed, collided with a northbound freight train, consisting of eight cars and a caboose drawn by locomotive 372, which was traveling at 20 miles an hour or faster. The southbound train was forced backward 165 ft. and the front part of the other train was wrecked. The engineman and one brakeman of the northbound train were killed and six employees were injured. The report blames the entire crew of the southbound train for failure to obey the wait order. Petoskey was the starting point of the southbound train and the arrival of a northbound passenger train, which had to be waited for, seems to have occupied the minds of the men so that they forgot their order. None of the employees on the train noted the time at which it was starting. No adequate reason could be developed to explain the failure of the five men. The northbound freight had followed northbound passenger train No. 1 from Lanson after six minutes instead of waiting ten minutes, according to the rule; and, says the report, if this train had waited the full ten minutes, there would not have been sufficient time to attempt to reach Petoskey under the wait order and so the collision would not have occurred.

Looking Backward

Fifty Years Ago

The House committee on Pacific railroads at Washington has agreed upon a bill extending the land grant of the Northern Pacific six years from July 4, 1880. The section of the bill provides that when the total amounts of the sales of the land by the company shall equal the cost of construction and equipment, the lands not used or occupied by the railroad and remaining unsold shall revert to the United States.—*Railway Age*, June 3, 1880.

The Baltimore & Ohio, on May 24, began the operation of a fast express train between Chicago and Washington, making the run in a little under 28 hours, or about seven hours less than the time previously made, and faster time than is made at the present time by any of the lines between Chicago and the East. With the new train schedule, the railroad inaugurated a new boat transfer service from one side of Baltimore to the other, doing away with both the old transfer through the streets by horses and the one through the tunnel under the city.—*Railroad Gazette*, May 28, 1880.

Twenty-Five Years Ago

The Pennsylvania put into service on May 28 a new fast mail train between New York and St. Louis, Mo., which makes the run in 25 hours, or four hours less than the fastest train at present.—*Railway and Engineering Review*, June 3, 1905.

H. M. Adams, assistant general freight agent of the Oregon Railroad & Navigation Company [now the Oregon-Washington Railroad & Navigation Company], has been appointed assistant traffic manager of the Great Northern at Seattle, Wash.—*Railway Age*, June 2, 1905.

The Erie, during the past three years, has carried on a vigorous program for the improvement of line and equipment. Since 1903 the road has acquired and ordered more than 400 locomotives, freight and passenger, all of heavy power, and in addition has had 600 locomotives repaired by one of the locomotive builders.—*Railway Age*, June 2, 1905.

Nineteen hours instead of 20 will be the schedule time of the Twentieth Century Limited train of the Lake Shore & Michigan Southern and the New York Central from Chicago to New York, beginning June 18. In order to cover the distance under the proposed schedule, the train must maintain an average speed of 50 miles an hour for 955 miles.—*Railway Age*, June 2, 1905.

Ten Years Ago

The Interstate Commerce Commission, on May 21, announced that it had in part accepted the recommendation of the railways for the apportionment of the revolving fund of $300,000,000 provided for in the Transportation act, to the extent that it will recommend the loaning of at least $125,000,000 out of the fund for the purchase of locomotives and cars.—*Railway Age*, May 28, 1920.

The Commission on May 20 took the first formal action to comply with the suggestions made by the railroad executives in their petition to the Commission on May 15 asking it to exercise its emergency powers to help relieve the critical car service situation. Three service orders were issued, declaring the existence of an emergency which requires immediate action. The orders directed the carriers to reroute traffic by the most available routes, gave specific directions for the return of empty open-top cars to eastern lines and gave similar directions for the delivery of empty box cars to western lines for grain loading.—*Railway Age*, May 28, 1920.

New Books

Manual of the American Railway Engineering Association. 1531 pages, 6 in. by 9 in. Bound in cloth and half morocco. Published by the association, E. H. Fritch, secretary, 59 East Van Buren street, Chicago. Price, cloth, $6 to members, $10 to non-members; half morocco, $7 to members, $11 to non-members.

The first edition of the Manual appeared in 1905, and succeeding editions were issued at maximum intervals of about five years until 1921, when the fifth edition was published. This, the sixth edition, is the first to appear in nine years, a period of rapid changes and of the many refinements in maintenance practices and of new practices following the wider use of machine equipment. Although recently released, the Manual is dated 1929, since it includes only matter accepted by the association up to and including the convention of that year.

The American Railway Engineering Association is recognized as one of the most active and thorough of engineering societies. Because of the high standards which it has set up for itself and the care with which it scrutinizes the work of its committees, the Manual of the association is the recognized authority throughout the world on railway engineering and maintenance practices.

Committee recommendations for inclusion in the Manual are based on years of study. In general, these studies cover established practices or those that have wide application. As might be expected, however, in a work of this character and magnitude, in a field where practices are constantly changing, the recommendations lag considerably behind the practices of the more progressive roads. An example is the recommended practice in rail renewal, which is based on hand methods, whereas present practices involve the use of power machines and tools for this operation.

This edition follows the general plan of the former editions in that it is a compilation of the standards of recommended practice which have been adopted by the association, thus representing 30 years of intensive work by 24 standing and special committees, covering such subjects as Roadway, Ballast, Ties, Rail, Track, Grade Crossings, Signs and Fences, Wooden Bridges and Trestles, Masonry, Iron and Steel Structures, Wood Preservation, Buildings, Water Service and Sanitation, Yards and Terminals, Shops and Locomotive Terminals, Signal and Interlocking, Electricity, Economics of Railway Location, Economics of Railway Operation, Economics of Railway Labor, Conservation of Natural Resources, Records and Accounts and Rules and Organization.

The matter in the Manual covers nearly every feature of railway engineering and maintenance and many phases of operation that are affected by engineering practices. It includes definitions; specifications for material and workmanship; standard practices in inspection and routine maintenance operations; standard designs for roadway, track, trackwork, structures, tools and other equipment; methods of keeping records and accounts; rules for the guidance of officers and employees in the engineering department; and miscellaneous data of value in maintenance of way practices.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Pennsylvania Railroad, by John W. Barriger, III. Foreword by Calvin Bullock. An historical sketch covering the years since the World War, outlining corporate structure, scope of the system, I.C.C. valuation and present value, air transport, water transport, electrification, improvements, employee relations, and consolidation. Map, p. 43-44, and really notable illustrations. 88 p. Pub. by Calvin Bullock, New York City. *Apply.*

Six Horses, by Capt. William Banning and George Hugh Banning. Foreword by Major F. R. Burnham. The end papers of the book comprise a map showing the overland stage routes, 1857-1867. A fine history of the Birch, Butterfield, Majors and Russell, and Holladay overland stage lines that provided fast transport before the coming of the transcontinental railroads. Capt. Banning was a stage driver. The financial and supply and maintenance problems are discussed along with what are usually considered the more picturesque episodes such as record runs and Indian raids, but imagine keeping 400 mules, or 500 or more horses in condition for the work they had to do! Illustrated. 410 p. Pub. by The Century Co., New York City. $4.

A Suggested Program of Weed Research and Control, by Agricultural Service Department, Chamber of Commerce of the United States. Submitted to Hon. Alexander Legge, Chairman, Federal Farm Board. "Weed control by railroads," p. 12-13. 27 p. Pub. by Chamber of Commerce of the United States, Washington, D. C. *Apply.*

The Terminals' Place in Transportation, by C. B. Sudborough. Address at 2d National Airport Conference, Buffalo, N. Y., on the most modern types, especially those of the Pennsylvania Railroad. 4 p. Pub. by Pennsylvania Railroad, Philadelphia, Penna. *Apply.*

Periodical Articles

Railways and Economic Progress in Nyasaland. Summary of a report on proposals for improving the railway systems, especially by bridging the Zambesi River to facilitate communications with Beira. International Labour Review, May, 1930, p. 710-712.

Some Transport Problems, by R. Stuart Pilcher. Importance of and development of transportation, the changing conditions of the present, use of railless traction of various types, and operating costs per bus mile discussed. Journal of the Institute of Transport, May, 1930, p. 294-303.

Special Accounts Summing Up the Reports on the Questions for Discussion at the Eleventh Session of the International Railway Congress Association (Madrid, 1930). Reports under section I, "Way and works," include reports on use of concrete on railways, rail wear and breakage, stresses in bridges, and improvements in maintenance of way tools and in organization of maintenance work; under section II, "Locomotives and rolling stock," reports on locomotives of new types, improvement in steam locomotives, electric locomotives for main line, and all steel coaches; under section III, "Working" (or Operation), reports on relations between railways and seaports, switching in classification yards, signalling of lines for fast traffic and in main station, special economical traction methods; section IV, "General," reports on competition of road transport, use of machines for simplifying statistical and accountancy work; staff co-operation for efficiency and staff participation in the profits, and training of staff of all grades; and section V, "Light railways and colonial railways," reports on railways of penetration, improvements in maintenance of way on light railways, electrification of secondary lines, and rail motor vehicles. Bulletin of the International Railway Congress Association, May, 1930, entire issue.

Steam Cars and Wild Men's Whiskers, by Harris Dickson. A short story on the civilizing influences of railroads. "Steam cars leads wild people to git tame, injuces 'em to wear shoes, an' shave regular. After while dey buys a big plantation an' rides in ottermobiles." p. 9. Country Gentleman, June, 1930, p. 9, 49-50.

United States Air Transport Routes. Table showing routes, airway miles, service available, plane miles scheduled daily, original date of commencement, and present operator. Maps, p. 7-10. Air Commerce Bulletin, May 1, 1930, p. 24-26.

Odds and Ends of Railroading

A Whale of a Carload

As a part of a show, the Southern Pacific has been transporting a peculiar commodity from point to point on its lines, during the past several months. It consists of a whale, embalmed with 60 barrels of embalming fluid. The carcass weighs 130,000 lb., the heart alone weighing 1,200 lb. and the tongue 500 lb.

Railways Through Cemeteries

On the main line of the Cincinnati, Hamilton & Dayton, now the Toledo division of the Baltimore & Ohio, is one of the few cases of railways passing directly through cemeteries. On the outskirts of Cincinnati, this line traverses the center of Spring Grove cemetery on a high embankment, for a distance of about a mile. Despite this, the cemetery is regarded as one of the most beautiful in the country.

European Maintenance

One of the surprising things to an American railroader traveling in Europe is the miles and miles of neatly clipped hedges that serve as right-of-way fences. This attests to the cheapness of section labor there. Another noticeable feature is the row of massive stone walls that line the cuts, each stone being as carefully chiseled as though it had been intended for a palace wall.

A Railroad Puzzle

George Seames, crossing tender on the Southern division of the Boston & Maine, has a puzzle which he challenges railroad men to solve. Here is the problem:

Two trains were ordered out on a western road, each train to haul 50 cars; one going east and the other west. Coming to a siding, they found a train of 50 cars disabled; could be handled only by pushing. The siding would hold only 50 cars and one locomotive. Rate of locomotive, 50 cars. How did No. 1 pass No. 2?

The Boston & Maine Railroad Employees' Magazine tried to obtain the answer from Mr. Seames, but he is closely guarding the solution.

The Oregon Pony

PORTLAND, ORE.

TO THE EDITOR:

In the issue of April 26, page 981, appeared an illustration not accompanied by text. The picture was taken in front of the Portland Union station and shows the Oregon Pony locomotive, the first locomotive in the Pacific Northwest. It is the property of the State of Oregon and was recently placed in the Union Station area by the Northern Pacific Terminal Company, the corporation which (owned by the Union Pacific, the Northern Pacific and the Southern Pacific) operates the Portland freight and passenger terminals.

The Oregon Pony was brought to Portland by steamship from San Francisco where it was built, in March 1862, and from May, 1862, to April, 1863, it was used in freight and passenger service on the first Oregon railroad, a 5½ mile steamboat portage between Bonneville, Ore., and Cascade Locks. These stations are respectively 40 and 46 miles east of Portland on the main line of the Oregon-Washington Railroad & Navigation Company, whose tracks are laid over the route taken by the early portage railroad.

FRANK B. GILL.

"She" is a "He" Now

Half a mile, three-quarters of a mile, even a mile or more away is the end of *his* long train. For, with tremendous power *he* can easily pull 100 loaded cars uphill. Moving heavy loads at surprising speed, *he* personified dependability, service, promptness and progress—qualities which make a railroad.

When the Northern Pacific placed these sentences, descriptive of its new four-cylinder 2-8-8-4 locomotive, on the back of a pictorial post card, its advertising department chose to refer to the engine in the masculine, discarding the time-honored habit of railway men of placing motive power in the feminine category. Northern Pacific officers declared that no railroader ever thought of referring to his locomotive as anything but "she" or "her." But the copy-writer stuck by his convictions that such a massive piece of machinery typified the masculine rather than the feminine gender—and not without some precedent. Rudyard Kipling, in "The Day's Work," referred to the locomotive, ".007," the principal character in one of the tales, in the masculine. A number of American literary authorities were consulted. While opinions differed, with some leaning to the neuter gender, the majority preferred the masculine. A professor of English at Amherst College replied, "Locomotives are not sex-conscious. * * * By all means let us have more he-locomotives."

Origin of Standard Gage

The following interesting letter was sent to Modern Transport, London, by T. C. Powell, president of the Chicago & Eastern Illinois:

"In the January 11 issue of Modern Transport you comment upon a letter which Mr. Harold Cox contributed to the Times on the subject of the origin of the British railway gage. Mr. Cox mentions that the grooves of the tracks left by the Roman chariots were exactly 4 ft. 8½ in. apart, which is also the gage of the British railways, and then states: 'There is reason to believe that this identity of gage is not merely a coincidence. I remember as a boy hearing from a barrister a detailed account of how the gage of the English railways was decided. A committee of the House of Commons had been sitting for a long period taking evidence from specialists as to what would be the best gage for the railways then seeking Parliamentary sanction. Finally the committee grew bored with the multitude of conflicting opinons, and one of the members suggested that the best way to settle the matter was to go out and measure the first wagon that passed. The committee promptly accepted the suggestion, and the width between the wheels of the wagon measured was found to be 4 ft. 8½ in.' Mr. Cox adds that, if this account is accurate, the identity of our present railway gage with the gage of Roman chariots is not a mere coincidence, but the result of the unbroken maintenance of an ancient practice.

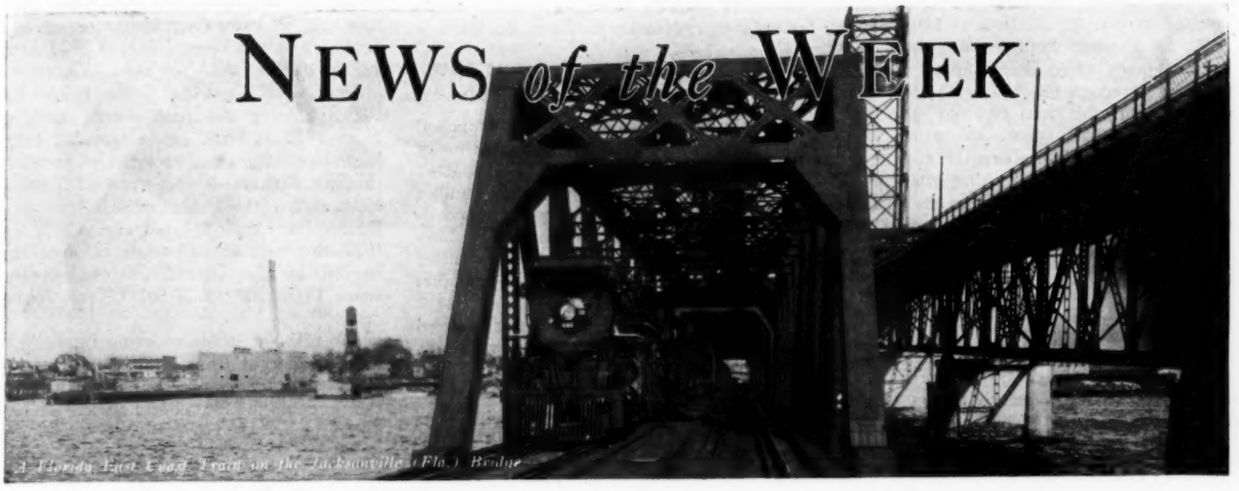
"May I say that I am sure this is in error, because Mr. Stephenson is on record as stating that, when he was called upon to construct a locomotive for a railroad, he adopted the same gage as the coal mine locomotives which had been in service for years, and in building the mine locomotives he simply adjusted the gage to the prevailing gage of mine tracks then in existence.

"There was, however, as you know, a 'war of gages' and, of course, it was necessary to settle the point by law to encourage a universal interchange of equipment. It is, therefore, quite probable that during that discussion the episode occurred which is referred to above, and doubtless it was found that the width between the wheels of the wagon measured was about 4 ft. 8½ in. I doubt if there was any standard gage for the ordinary wagons, but the wagons used at the coal mines must have had a reasonably standard gage, because they originally operated between flanged rails.

"Most of what I said above is contained in a book, printed in 1852, called Our Iron Roads, and the writer goes on to say that after experimenting with a 3-ft. gage and a 7-ft. gage, the conclusion reached by the railroad officials was that approximately 4 ft. 8½ in. was the most economical from all points of view, including the cost of the right-of-way through expensive real estate.

"Some measurements settle themselves. For instance, who knows how the length of a lead pencil was first selected?"

NEWS of the WEEK



A Florida East Coast Train on the Jacksonville (Fla.) Bridge

THE PORT OF NEW YORK AUTHORITY has moved its offices from 75 West Street to 80-90 Eighth Avenue, New York City.

THE SUPREME COURT OF THE UNITED STATES has ordered a reargument at the October term of the case before it involving the validity of an order issued by the Interstate Commerce Commission in connection with the re-organization of the Chicago, Milwaukee & St. Paul which prohibited the new company, the Chicago, Milwaukee, St. Paul & Pacific from paying to the reorganization managers $1.50 a share of the $4 per share assessment for reorganization expenses.

AN ORDER OF THE RAILROAD COMMISSION OF CALIFORNIA requiring the Atchison, Topeka & Santa Fe, the Los Angeles & Salt Lake and the Southern Pacific to construct a union passenger station at Los Angeles, Cal., at an estimated cost of $10,000,000, was upheld by the California Supreme Court at San Francisco, Cal., on May 27. The United States Supreme Court, on November 25, 1929, had ruled in the Los Angeles case that the Interstate Commerce Commission has no jurisdiction to require railroads to abandon existing facilities and construct a new union station.

Motorist Pays for Damaging Train

Harold Joselin of Waitsfield, Vt., who, on May 13, near Essex Junction, drove his car into a train of the Central Vermont, has settled with the road for the damage done to its cars. The railroad company, holding that Joselin's negligence was the cause of the trouble, prepared to sue him; but the case did not come to trial, as the insurance company, which had insured the automoblie, paid the railroad company's claim of $298.29.

House Committee on Mexican Immigration

The House committee on immigration and naturalization on May 22 ordered a favorable report on the Harris bill, passed by the Senate, to apply quota restrictions to immigration from Mexico to the United States with an amendment specifying that the secretaries of state, commerce and labor shall jointly determine the quota to be applied under the terms of the present immigration act. Action of the committee came after hearings on the bill at which it was opposed by representatives of the Department of State on the ground that under recently adopted administrative procedure the number of immigrants from Mexico had been reduced to such an extent that the quota would effect little more restriction and might lead to ill-feeling between the two countries.

$67,000,000 For Inland Waterway Improvements

The War Department announces that it plans to spend $67,000,000 this year on improvements to rivers, harbors and canals, including the $55,000,000 to be appropriated in the pending War Department appropriation bill and a special appropriation of $12,000,000 approved by the President on March 26. The expenditures will be made on projects heretofore approved by Congress the total estimated cost of which is $216,000,000. The pending rivers and harbors bill would authorize from $110,000,000 to $120,000,000 in additional work to be covered by future annual appropriations. The department statement says that the project of a 6-foot channel in the Missouri river between Kansas City and the mouth is being pushed vigorously, $2,200,000 having been made available for the work on March 26.

Long Island Protests State Order as Wasteful

The Long Island Railroad, asking for a re-hearing in connection with recent orders of the New York Public Service Commission, calling for improvements in passenger service which would cost $20,000,000, declares in its petition that the proposed improvements would be wasteful and confiscatory and would place a direct burden on interstate commerce; and also are based on incomplete and insufficient data.

The main point of the road's argument is that the lines on which it would be required to make improvements and to provide numerous additional trains, are within a short time to be paralleled by elevated or subway lines to be constructed by the City of New York; these new lines would take business in substantial amount away from the Long Island and prevent it from earning a fair income.

It is stated that 45 per cent of the passenger revenue of the road comes from business originating and terminating within the limits of the City of New York.

As to operating a certain maximum number of trains in rush hours and the installation of certain improvements at the Pennsylvania Station in New York, the company says the order of the commission will be complied with.

Signal Section at Hot Springs, Arkansas

P. M. Gault, chairman of the signal section of the American Railway Association, announces that the next regular meeting of the Section will be held at the Arlington Hotel, Hot Springs, Ark., on Tuesday, Wednesday and Thursday, September 9, 10 and 11. Members should make reservations with the hotel direct.

Special trains are to be run from New York over the Pennsylvania, leaving at 7:45 p.m. on September 6, and over the New York Central, leaving at 7:05 p.m. on the same day. Both trains arrive at Hot Springs on the morning of the 8th. Also an observation compartment car and sleeper will leave New York over the New York Central at 1 p.m. on the 6th, for passengers boarding the train at local points in New York state. Returning, the trains leave Hot Springs at 8 p. m. on September 11, over the Missouri Pacific.

Labor Injunction Sustained

The Supreme Court of the United States, in an opinion rendered on May 26 by Chief Justice Hughes, affirmed the decisions of the federal district court and the circuit court of appeals for the fifth circuit in the case of the Texas & New Orleans et al., v. Brotherhood of Railway and Steamship Clerks et al., in which the railroad was held to have violated an injunction issued by the district court restraining it from interfering with, influencing or coercing the clerical employees

of the road in the matter of their organization and designation of representatives in a wage controversy under the railway labor act. The company had declined to recognize the brotherhood as representing the majority of the employees and had recognized a so-called "company union." Before the courts the railroad took the position that in so far as the railway labor act undertakes to prevent either party from influencing the selection of representatives it is unconstitutional.

Pennsylvania's Western Region Makes On-Time Record

The best passenger train performance ever made by the Western region of the Pennsylvania was accomplished during April, when 96.4 per cent of the trains were brought into their terminals on time. The best previous record was 95.9 per cent which was made last February.

Of the passenger trains operated, 99.3 per cent made schedule time during April, thereby bettering the mark of 99.1 which was made in April, 1929.

The Grand Rapids division, despite a furious gale which interfered with train operation for a time, ranks among the region's nine divisions with 99.6 per cent of the 478 trains making perfect trips. The Chicago Terminal and Indianapolis divisions set the pace with their on-schedule performances during April, with an almost perfect score of 99.9 per cent for each.

Bus Bill Again Reported Without Change

The bill providing for a system of regulation of interstate motor vehicle passenger service on the public highways was returned to the Senate calendar on May 23 when the Senate committee on interstate commerce, to which it had been recommitted for further consideration, reported it back without change. Chairman Couzens said the committee had been unable to agree on amendments. A minority of the committee has been trying to remove from the bill the requirement of a certificate of public convenience and necessity.

Also the bill was restored to the preferential calendar on May 26 by the Republican steering committee of the Senate, which announced a new program following the decision to postpone discussion of the naval treaty to special session. The new program decided upon by the Senate leaders provides that after the tariff bill is out of the way consideration shall be given to the rivers and harbors bill, veterans' legislation, and then the Parker bill. Some fears have been expressed by advocates of the passage of the bill that the announcement by the Interstate Commerce Commission of a new investigation of co-ordination of motor transport may make it more difficult to pass the bus bill, although the bill deals with the bus as an independent method of transportation for which a special system of regulation is proposed, while the commission's investigation is concerned especially with motor transport both by bus and by truck in its relation to railroad transportation.

Real Estate Men Approve Site of Inland Freight Station

Unqualified approval of the proposed site for the Port of New York Authority union inland freight station on Manhattan has been expressed by a large number of important real estate experts, according to an announcement made on May 26 by Howard S. Cullman, chairman of the Port Authority's freight terminal committee.

"Endorsements of the location favored by the Port Authority and the railroads for Manhattan's first union inland freight station," said Commissioner Cullman, "have come to us unsolicited from many sources, including both civic organizations and large real estate firms. They have given careful study to the plans and appreciate that not only will trucking be lessened in the streets of Manhattan by the establishment of this station, but that the building itself has been designed in a way that will make it a real addition to the neighborhood. As we have already stated, it has been designed on the Eighth avenue side, including one hundred feet west on Fifteenth and Sixteenth streets, as a modern office building."

As one letter stated: "The site is a central, convenient and wholly logical location for the inland freight terminal contemplated by the Port Authority, as indicated by plans, drawings and descriptions. A careful survey will indicate that the site selected is a geographical center of shippers and receivers of l.c.l. freight and express in Manhattan."

National Conference on Street and Highway Safety

The third National Conference on Street and Highway Safety, called by Secretary Lamont, of the Department of Commerce, as chairman, began a three-day session at Washington on May 27. In his opening address Secretary Lamont pointed out that motor vehicle fatalities in the United States have increased from 12,500 in 1920 to 31,000 in 1929, but that there are encouraging signs which may offer some keys to the solution of the problem. First among these he mentioned railway grade crossing accidents, which he said have not increased materially in the past few years in spite of the enormous increase in the number of automobiles. "Here," he said, "is an indication of the value of engineering attention and organized educational effort. There are still far too many grade crossing accidents but there is reason to expect that by more widespread application of established methods, such as are outlined in the report of your Committee on Protection of Railway Grade Crossings and Highway Intersections, a greater reduction in this type of accident may be brought about." The report of this committee was to be presented and discussed on May 28.

The committee on Traffic Accident Statistics, of which Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, is chairman, reported that fatalities due to railway grade crossing accidents increased from 1,791 in 1920 to 2,485 in 1929, or 38.7 per cent. There was a decrease of 3 per cent between 1928 and 1929. During the past seven years, or from 1923 to 1929, grade crossing fatalities have remained relatively constant, ranging between a minimum of 2,149 in 1924 and a maximum of 2,568 in 1928. During the same period, from 1923 to 1929, the number of motor vehicles registered in the United States increased from 15,092,000 to 25,501,000, or 76 per cent.

The ratio of grade crossing fatalities to total traffic fatalities showed a generally downward tendency from 1920 to 1929, the percentage being 10.5 per cent in 1920 and 7.5 per cent in 1929.

C. N. R. to Lay Special Tracks to Montreal Airport

In order to handle properly the heavy traffic which is expected to visit the St. Hubert (Montreal, Que.) airport during the stay there of the British dirigible R-100, the Canadian National is to start work immediately on the construction of three new tracks on its property between Fulford and Guy streets, Montreal. Permission of the city of Montreal and of the Railway Board of Canada, which must be secured to carry out the work, appears certain to be granted.

It is estimated by the Montreal city authorities and the transportation committee of the Canadian National that at least 250,000 people will make the trip to St. Hubert during the ten days that the airship is there. To handle these crowds the railroad plans to run trains over its new tracks at eight- or ten-minute intervals, on which basis about 8,000 people can be carried per hour, with a total of about 50,000 a day. The proposed fare is only 50 cents for the round trip, so that passengers visiting the airport by train will effect a considerable saving, both in time and in money, over those using others means of transportation. To avoid traffic congestion, the city authorities are co-operating with the railroad company in encouraging people to make the trip by rail.

Senate Committee Proposes Increased Expenditure to Deepen Missouri River

The Senate committee on commerce, after a series of hearings on the river and harbors authorization bill as passed by the House, submitted a favorable report to the Senate on May 22 with amendments which would increase the total estimated cost of the projects approved from $110,000,000 to over $120,000,000.

To meet the objections of those who opposed the federal acquisition of the Erie and Oswego canals an amendment proposed by Senator Vandenburg, of Michigan, was adopted, providing that those canals shall be operated as barge canals only, "not as or with any intent to become ship canals, or as hindrance to the development of the St. Lawrence deep-sea route," and providing also that

no project for widening or deepening the canals shall proceed without further authorization of Congress.

The committee also adopted an amendment proposed by Senator Howell, of Nebraska, authorizing the expenditure of $15,000,000 on the Missouri river, in addition to the unexpended balance of a previous authorization of $12,000,000, of which only about $1,800,000 has been spent. The House bill had authorized $15,000,000 including the unexpended balance.

Protective Section, A. R. A.

The Protective Section of the American Railway Association, J. D. Roosa, chairman, announces that the tenth annual meeting of the Section will be held at the Statler Hotel, Buffalo, N. Y., on June 17, 18 and 19.

The principal business at the first section, Tuesday morning, following the opening addresses, will be the reports of the Committee on Cooperation with the Freight Claim Division, R. S. Mitchell (M.P.) chairman, and of the Committee on Law Enforcement, H. L. Denton (B. & O.) chairman. There will be an address by Dr. J. M. Gibbons, general attorney of the New York, New Haven & Hartford.

The speakers on Tuesday afternoon will be C. T. Williamson, general manager of the Railway Express Agency at Buffalo; A. B. Moore, inspector of New York State Police and H. E. Cassidy, inspector of Police of the Chesapeake & Ohio.

On Wednesday morning the speakers will be R. B. White, president of the Central of New Jersey; H. A. Rowe (D. L. & W.); T. T. Keliher (Ill. Central) and W. F. Steffens (N. Y. C.). The election of officers will take place at this session.

On Wednesday afternoon the report of the Committee on Regional Police Committees will be presented by J. C. Gale, (U. P.) chairman. Other speakers at this session will be Major Calvin Goddard; J. K. Ellis (M-K-T); F. W. B. Humes, (Penna.); George Shea, (C. N.); and Thomas Ward, (N. Y. C.).

On Thursday morning there will be addresses by D. W. Dinan (N. Y. C.); A. L. Green (A. R. A.); F. F. Phillips (A. T. & S. F.), and Hon. Thomas H. Noonan, Justice of the New York State Supreme Court.

The annual dinner, dance and entertainment will be held on Wednesday evening when there will be an address by Dr. J. W. LeSeur, special representative of the president of the New York Central.

C. N. R. Establishes Budget System

Explaining to a committee of Parliament the monthly budget system recently established by the Canadian National Sir Henry Thornton, president of the company, said:

"One thing I think that has a marked effect this year, as compared with previous years, has been the introduction of a method of dealing with our expenses. A railway is a good deal a state of mind. That is to say, the result of operations depend a good deal on the state of mind of the officers and men throughout the railway. If their state of mind is a spending state of mind, if earnings have been good for a period of years, and new improvements have been introduced, and the company has been spending money, you get a spending state of mind all over the railroad. Not only is that true of this railroad, but it is true of every railroad that I have had anything to do with. On the other hand, if you create an economical state of mind and the officers and men become seized of the importance of economy, and it becomes a matter of competition to see how much money can be saved, and where it can be saved, then you begin to save money.

"It does not make any difference what state of mind I may have, or the vice presidents may have, the important thing is the state of mind of the men in the trenches doing the job. This year there has been introduced a monthly budget system, which I think we have developed to a little higher degree of perfection than exists anywhere that I know of. We estimate about the middle of each month, and each region estimates about what it expects its gross earnings to be. It sets a certain objective with respect to its expenses, and the objective is determined by calling in the heads of all departments in the region, who, under the chairmanship of the general manager, discuss their expenses and suggest to one another the ways to economize and how money can be saved. It becomes, then, really a sort of competition between departments to see which can save the most. All departments, and all officers realize the position in which the company is placed, and there is established a state of mind as a result of that. Those meetings have produced some quite remarkable suggestions from the officers themselves in the way of saving money. They lay out their program for the following month, and adhere very closely to it so that we know in Montreal pretty well by the latter part of any month what the net will probably be for the following month.

"Those monthly objectives are laid out in accordance with the program of expenditures which have been set up for the year. We, at the first of the year, make an estimate of what we think our gross may reasonably be, and then we apportion, as well as we can, the expenses to the different departments. Now, that is all right for the year, but in order to get the result for the year, you have also to check it month by month, because if you get a runaway on your hands, and the expenses are seriously exceeded for two or three months, you cannot catch up that year. It is very difficult to do, so that we set up a yearly objective and that is rationed month by month, and the object of these budget meetings on the different regions is to check that month by month, and to keep the expenses down to the monthly figure. In addition, it is to see if further economies cannot be introduced."

Exhibitors at the Master Boiler Makers' Convention

During the convention of the Master Boiler Makers' Association, held at the William Penn Hotel, Pittsburgh, Pa., May 20 to 23, fifty-one manufacturers, members of the Boiler Makers Supply Men's Association, exhibited boiler materials, maintenance tools and facilities. The list of companies, products and representatives follows:

Air Reduction Sales Company, New York.—Oxygen and acetylene welding and cutting torches and supplies. Represented by Joe Kenefic, H. A. Hocking, G. Van Alstyne, J. A. Warfel, B. N. Law and R. T. Peabody.

American Arch Company, Inc., New York.—Pictures, etc. Represented by B. A. Clements, J. D. Brandon, J. P. Neff, Samuel MacClurkan, T. Mahar, T. F. Kilcoyne, T. M. Ferguson, M. R. Smith, W. W. Neale and George Wagstaff.

American Locomotive Company, New York.—Flexible staybolts, rigid staybolts and hollow staybolts. Represented by G. P. Robinson, W. E. Corrigan, Ross Anderson, S. W. Provost and W. J. Leisering.

Arrow Tools, Inc., Chicago.—Chisels, beading tools, back-out punches, rivet-cutting tools and safety retainers. Represented by N. W. Benedict and D. R. Hughes.

Bethlehem Steel Company, Inc., Bethlehem, Pa.—Boiler tubes, bolts, engine and staybolt iron and steel and heat-treated bolts. Represented by George Raab.

The Bird-Archer Company, New York.—Blow-off cocks, sludge remover, transparency of the new locomotive water conditioner. Represented by H. C. Harragin, F. K. Tutt, J. L. Callahan, H. P. Mauer and H. K. Downey.

The Boiler Maker, New York.—Represented by R. E. Beauchamp, L. S. Blodgett and George Slate.

W. L. Brubaker & Bros. Company, New York.—Taps, dies and reamers. Represented by W. Searls Rose and E. J. Marx.

The Burden Iron Company, Troy, N. Y.—Samples of staybolt iron, engine-bolt iron, iron rivets, hollow-rolled and hollow-drilled staybolt iron. Represented by John C. Kunns and William Downs.

A. M. Castle & Co., Chicago.—In connection with Lukens Steel Company and Champion Rivet Company. Represented by George R. Boyce and O. F. Olsen.

Champion Rivet Company, Cleveland, Ohio.—Rivets to meet A. S. M. E. and A. S. T. M. specifications, Toncan iron rivets, stainless steel rivets and centerless ground rivets for high-pressure work. Represented by David J. Champion, T. Pierce Champion, F. J. Lawless and W. H. S. Bateman.

Chicago Eye Shield Company, Chicago.—All kinds of goggles, including a new goggle that fits over glasses, welding glass, hand shields, helmets, etc. Represented by Robert Malcom, James H. Reid and John Liautaud.

Cleveland Steel Tool Company, Cleveland, Ohio.—Punches, dies, rivet sets, chisel blanks and compression dies. Represented by R. J. Venning and H. E. Harmon.

Dearborn Chemical Company, Chicago.—Scientific water treatment, treating plants and No-Ox-Id rust preventive. Represented by F. B. Horstmann, J. A. Crenner, L. P. Bowen and W. H. Kinney.

Detroit Seamless Steel Tubes Company, Detroit, Mich.—Seamless steel boiler and mechanical tubes. Represented by C. H. Hobbs, S. H. Worrell and H. Earle Ross.

Electro-Chemical Engineering Corporation, Chicago.—Locomotive boiler model showing installation of Gunderson Process for preventing pitting and corrosion by electro-chemical means, and detail parts. Represented by L. O. Gunderson, O. W. Carrick and C. G. Lunz.

Ewald Iron Company, Chicago.—Charcoal bloom staybolt iron, engine bolt iron, and hammered iron billets. Represented by J. P. Bourke and W. R. Walsh.

J. Faessler Manufacturing Company, Moberly, Mo.—Boiler makers' tools, flue expanders, etc. Represented by G. R. Maupin and P. C. Cady.

Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio.—Solid and hollow staybolts, solid and hollow tapered radials and crown stays and solid and hollow staybolt-iron bars. Represented by C. M. Walsh, E. J. Raub and J. T. Doyle.

Firebar Corporation, Cleveland, Ohio.—Grates. Represented by M. P. Van Woert and Robert Watson.

Flannery Bolt Company, Pittsburgh, Pa.—Flexible staybolts, telltale flexible staybolts, installation tools, electrical contact staybolt tester and two-piece telltale flexible staybolts. Represented by J. Rogers Flannery, E. G. Flannery, E. S. FitzSimmons, W. M. Wilson, John H. Murrian, E. J. Reusswig, F. K. Landgraf, L. Finegan, G. R. Greenslade and Ed. S. Ryce.

Garratt-Callahan Company, Chicago.—Magic boiler preservative. Represented by A. H. Hawkinson, J. G. Barclay, W. F. Casper, H. M. Gray and Arthur Haggard.

Globe Steel Tubes Company, Chicago.—Seamless steel tubes and tubular products of carbon steels, special alloy and stainless steels. Represented by J. W. Floto, J. S. Bradshaw, J. M. Welles and W. S. Carson.

Huron Manufacturing Company, Detroit, Mich.—Washout and arch-tube plugs. Represented by E. H. Willard, P. C. Cady and George F. Morgan.

International Nickel Company, New York.—Samples of nickel steel alloys. Represented by A. L. Roberts.

Lima Locomotive Works, Inc., Lima, Ohio.—Photographs, Lima superpower steam locomotives. Represented by M. K. Tate.

Locomotive Firebox Company, Chicago.—Nicholson thermic syphon. Represented by A. A. Taylor, C. M. Rogers, E. J. Reardon, M. A. Foss, J. Baker and R. A. Carr.

Lovejoy Tool Works, Chicago.—Use-em-up drill sleeves, flexible couplings, tube expanders, flue cutters, re-cupping tools for rivet sets, setting and flaring tools, chuck for flexible bolt nuts, sleeve applicators, dolly-bars, special sockets, beading tools, backing-out punches, staybolt headers, rivet set clips, staybolt riveting dies, staybolt chucks, taper-shank sockets and thread chasers. Represented by W. H. Dangel and H. A. Lacerda.

Lukens Steel Company, Coatesville, Pa.—Test pieces, samples of various alloys in plate form and descriptive literature. Represented by Harry Loeb, W. H. S. Bateman, J. Frederic Wiese and C. H. Brown.

McCabe Manufacturing Company, Lawrence, Mass.—Literature describing the pneumatic flanging machine with a partial list of users. Represented by Fred H. McCabe.

National Tube Company, Pittsburgh, Pa.—Models showing manufacturing process of seamless pipe and tubing. National Shelby seamless boiler tubes and superheater tubes; National Shelby seamless pipe; extra heavy gages for locomotives; National copper steel pipe; National scale-free pipe for locomotives and train lines. Represented by F. N. Speller, P. J. Conrath, J. W. Kelly, J. M. Denney, C. E. Kennish, Frank Hamlett, H. G. Breckinridge, H. T. Miller, W. O. Preston, H. R. Redington, H. J. Wallace and G. T. Newman.

Old Dominion Iron & Steel Works, Richmond, Va.—Samples of special vibratory staybolt iron, solid and hollow, electric-steel staybolt bars, solid and hollow. Represented by Thos. S. Wheelwright and Dr. George Brooks West.

Otis Steel Company, Cleveland, Ohio.—Represented by George E. Sevey.

Oxweld Railroad Service Company, Chicago.—Oxy-acetylene cutting and welding equipment. Represented by F. C. Hasse, W. A. Hogan, A. N. Lucas, William Jones, T. E. Helton and C. S. Wright.

Paulson Tools, Inc., Wallingford, Conn.—Chisels, hand and pneumatic, chisel blanks, beading tools, rivet sets, backing-out punches, etc. Represented by Charles Loucks, John J. Brosman and Harry L. Burrhus.

Pittsburgh Steel Products Company, Pittsburgh, Pa.—Represented by C. V. Lally, C. H. Van Allen and W. H. Rowe, Jr.

Pratt & Whitney Company, Hartford, Conn.—Small tools such as taps, dies, etc. Represented by A. R. Gallant, A. W. Cordonna and J. J. Hebor.

Penn Iron & Steel Company, Creighton, Pa.—Samples of staybolt iron; engine-bolt iron; seamless hollow-drilled headed and threaded staybolts. Also several articles of furniture made of staybolt iron. Represented by Chas. J. Nieman.

Prime Manufacturing Company, Milwaukee, Wis.—Tank-hose strainer; square-thread washout and arch-tube plugs; double-seated gage cocks; channel drain cock; Clear Vision windows; composite fine thread washout and arch-tube plugs; all styles of grease plugs and grease-cup caps; guide oil cups; water-glass cocks, side windshield wings and cab ventilators. Represented by D. A. Lucas, T. F. Going and C. E. Murphy.

Reading Iron Company, Reading, Pa.—Samples of charcoal iron boiler tubes and staybolt and engine-bolt iron. Represented by G. H. Woodroffe, J. K. Aimer and W. Howells.

Republic Steel Corporation, Massillon, Ohio.—Toncan iron boiler tubes and pipe; stainless steel plate for firebox; nickel-iron staybolts. Represented by Irving H. Jones, H. L. Miller and Collin H. Aiken.

John A. Roebling's Sons Company, Trenton, N. J.—Welding wire, wire-rope slings. Represented by E. T. Weart.

Jos. T. Ryerson & Son, Inc., Chicago.—Samples of staybolt iron. Represented by J. P. Moses, G. L. Shinkle and A. N. Willcuts.

W. J. Savage Company, Inc., Knoxville, Tenn.—Roller-die type metal cutter, No. 2; bulletins describing new series metal cutter, a nibbling machine for working metal in flats up to ⅜-in. in thickness. Represented by John H. Murrian, W. D. Cunnyngham and K. J. Chapman.

The Superheater Company, New York.—Represented by G. E. Ryder, Bard Browne and K. E. Stilwell.

Torchweld Equipment Company, Chicago.—Gas welding and cutting equipment, acetylene generators, welding supplies and accessories. Represented by W. A. Slack, R. C. Waldie and W. E. Lyons.

Ulster Iron Works, Dover, N. J.—Special staybolt iron, engine bolt iron, special drilled hollow staybolts and wrought-iron rivets. Represented by C. Fred Barton, N. S. Thulin, W. W. Fetner and E. W. Kavanagh.

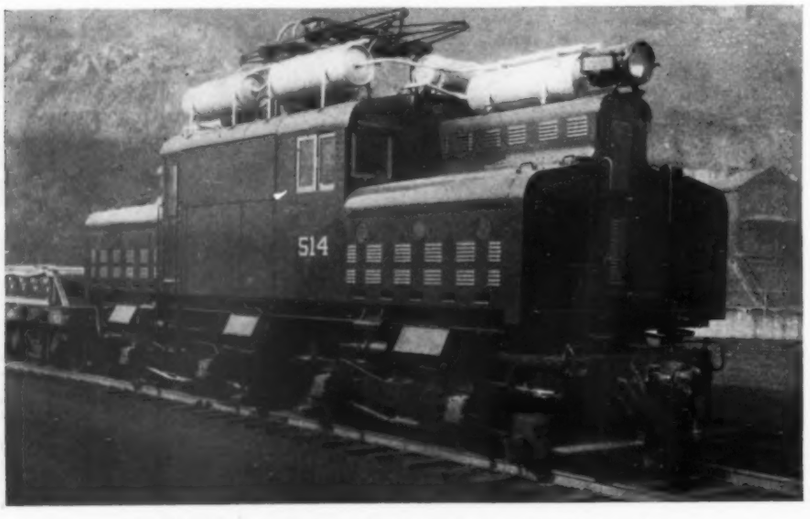
Water Treatment Company of America, Pittsburgh, Pa.—Samples of boiler compound. Represented by Harry L. Baer, George H. Neilson, Herbert Lewis, Robert C. Barker and W. E. Harris.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.—Welding set (stationary), 200-ampere; welding set (portable), 400-ampere; motor generator set, 60-volt; display board of welded samples. Represented by C. A. Ferguson, F. M. Bernard, A. B. McKelvey, W. W. Reddie, L. L. Clore, A. P. Lesnick, C. E. Swift, A. M. Candy and G. H. Koch.

Wilson Products, Inc., Reading, Pa.—Goggles, both clear and welding; respirators; welding-protective equipment, etc. Represented by Donald Charlton.

Wrought Iron Company of America, Rome, N. Y.—Samples of staybolt iron, engine-bolt iron, spikes, nuts, rivets, bolts, etc. Represented by C. C. Osterhout.

* * * *



Westinghouse Locomotive for Use in South America

One of three 77-ton, 600-hp. electric locomotives built by the Westinghouse Electric & Manufacturing Company for the Chili Exploration Company. Together with six similar locomotives ordered in 1926 they willl be used in one traffic in South America. Designed to operate either from overhead trolley, third rail or storage battery, the locomotives have storage batteries located under the hoods for use at mine locations where it is impractical to install third rail or overhead. Equipment includes a motor generator set to re-charge the 14 tons of storage batteries, while tanks on top of the locomotive carry compressed air for brake operation and dumping of the trailing cars.

Traffic

The Southeastern Shippers' Advisory Board will hold its next regular meeting at the Andrew Johnson Hotel, Knoxville, Tenn., on Friday, June 6.

A suit for $20,000 in penalties has been filed against the Alton Transportation Company, motor coach subsidiary of the Chicago & Alton, by the Missouri Public Service Commission because of the abandonment of passenger service between Louisiana, Mo., and Mexico without permission from the State Commission.

S. P. Finishes a Train in Pearl Gray

The Southern Pacific has adopted pearl gray as the color for the outside finish of its daylight train between San Francisco, Cal., and Los Angeles. Coincident with the adoption of the new color scheme, which is in keeping with the inside decoration of cream and light green, a new club car with a separate lounge and smoking compartment for women was added to the train.

Education of Farm Women

Sixty farm women are the latest recipients of the attentions of the Agricultural Department of the Baltimore & Ohio; these women, from Cumberland, Frederick and other places in the state of Maryland are to be taken on a three-day excursion to New York City, starting on Monday, June 2. This trip is being made to demonstrate how farm products are marketed and the railroad company acts in co-operation with the University of Maryland and the Railway Express Agency.

Besides being shown how all classes of farm products are handled, graded and sold, the excursionists will be shown around New York City and will visit a department store, a big steamship and other interesting places.

Joint Rate Order Modified

The Interstate Commerce Commission has postponed to August 25 the effective date of its order of April 8, 1929, in Ex Parte 96, in which it required the establishment of joint rates and through routes via the railroads and the federal barge line of the Inland Waterways Corporation. The postponement was made on petition of the waterways corporation.

The commission has also, upon reconsideration, modified its original findings to provide that no barge-rail rate or rail-barge-rail rate established under the order shall be lower than the all-rail rate between the inland point of origin or destination and the port of interchange with the barge line, and that barge-rail rates between Mobile, Ala., and points in southern territory shall be no higher than the corresponding barge-rail rates between New Orelans, La., and the same points. Proposed barge-rail rates between New Orleans and Mobile and points in southern territory were found justified except rates

which result in departures from the long-and-short-haul provision at Mobile.

Southwest Shippers' Board

An increase of 1.3 per cent in carloadings in the Southwest during the third quarter of the year was forecast at the annual meeting of the Southwest Shippers' Advisory Board in Enid, Okla., on May 23, the estimated loadings being 628,602 cars, as compared with 620,526 last year.

The commodities for which increases are expected are: Flour, meal and other mill products, cotton, coal, coke and lignite, gravel, sand and stone, salt, lumber and forest products, cement and paper. Those for which decreases are estimated are live stock, petroleum and petroleum products, brick and clay products. Loadings estimated the same as last year are for grain, hay, straw and alfalfa, cottonseed and products, citrus fruits, other fresh fruits, potatoes, other fresh vegetables, poultry and dairy products, ore and concentrates, sugar, syrup, glucose and molasses, iron and steel, machinery and boilers, lime and plaster, agricultural implements, automobiles, trucks and parts, fertilizer, chemicals and explosives, and all canned food products. Besides the various commodity committee reports, the coming winter wheat harvest, including production, acreage, movement, markets, etc., was discussed.

Frank A. Leffingwell, secretary of the Texas Industrial Traffic League, Dallas, was re-elected general chairman. Cecil E. Munn, president of the Enid Terminal Elevator Company, Enid, was re-elected alternate chairman. John W. Daniel, Jr., traffic manager of the Peden Company of Houston, was elected general secretary, and Charles P. Wasson of Dallas was re-elected secretary.

Fort Worth was selected as the place to hold the September meeting.

* * *

A Pennsylvania Decapod

Equipment and Supplies

Locomotives

THE INLAND STEEL COMPANY is inquiring for one or two storage battery oil-electric locomotives.

THE GENERAL AMERICAN TANK CAR CORPORATION has ordered one six-wheel switching locomotive from the American Locomotive Company. This is in addition to a previous order for one locomotive reported in the *Railway Age* of May 24.

THE CHILEAN STATE RAILWAYS have ordered four electric locomotives for express and passenger service from the Westinghouse Electric & Manufacturing Company. These locomotives are to be of 130 tons weight and will operate on 3,000 volts direct current.

Freight Cars

THE UNITED STATES NAVY DEPARTMENT is inquiring for two box cars and two flat cars.

THE HIGH POINT, THOMASVILLE & DENTON is inquiring for six flat cars of 50 tons' capacity and two caboose cars.

Passenger Cars

THE ERIE has ordered 10 gas-electric rail motor cars from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of January 11.

Machinery and Tools

THE UNION PACIFIC is inquiring for 40 pneumatic tools, a 5,000-lb. steam hammer, 3 floor grinders, a 36-in. power shear, 4 portable pipe threaders, 5 grinders, a 6-ft. radial drill, an axle lathe and a journal turning machine.

Iron and Steel

THE NORFOLK & WESTERN is in the market for 40,000 tons of 130-lb. rail.

THE BANGOR & AROOSTOOK has ordered 700 tons of steel for seven bridges from the Bethlehem Steel Company.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 450 tons of structural steel for a trainshed at Wichita, Kan.

THE NORFOLK & WESTERN has ordered 235 tons of steel for a bridge at Portsmouth, Ohio, from the Virginia Bridge & Iron Company.

THE NEW YORK CENTRAL has received bids on 200 tons of steel for a bridge at Knowlesville, N. Y., and 1,275 tons of steel for a viaduct at Toledo, Ohio.

THE ATCHISON, TOPEKA & SANTA FE has ordered 8,000 tons of structural steel for a bridge over the Illinois river at Chillicothe, Ill., from the McClintic-Marshall Company.

THE PENNSYLVANIA has placed orders for bridge steel including 350 tons for a bridge at Seward, Pa., with the American Bridge Company; 400 tons for a bridge at Pittsburgh and 350 tons for a bridge at Philadelphia with the McClintic-Marshall Company; 335 tons for bridge work at Pittsburgh with the Ft. Pitt Bridge Works and 300 tons with the Bethlehem Steel Company; 130 tons for a bridge at Staunton, Ind., with the Belmont Iron Works. The company has also received bids on 4,000 tons of steel for its Pier F at Jersey City, N. J.

Signaling

THE ATCHISON, TOPEKA & SANTA FE has ordered from the General Railway Signal Company material for an electric interlocking at Riverside Junction, Cal., 26 working levers.

THE BOSTON & ALBANY has ordered from the General Railway Signal Company 41 type SA color-light signals, 405 relays and other material for installation between Tower A, Brookline, Mass., and Lake Crossing (Natick).

BECAUSE OF INCREASING SCARCITY and rising costs of wood fuel for steam locomotives, the Oeste de Minas Railway of Brazil has recently put into operation a comprehensive electrification project on 46 miles of its main line. The electrified section, consisting of single track laid on the metre (39.37 in.) gage, extends from Barra Mansa, 60 miles from Rio de Janeiro, inland to Augusto Pestana. This line is one of the arterial railways of Brazil, with a heavy coastward traffic of coffee, other agricultural produce and live stock and a return traffic of agricultural implements and other manufactured goods. For over 30 miles of the newly electrified section there is an average grade of over two per cent against traffic bound inland from Rio de Janeiro, while the ruling grade is over three per cent.

The work in connection with the electrification included a hydro-electric power station at Carlos Euler, on the Bananal river, from which water for the generation of power is taken; high-tension transmission lines; three sub-stations; overhead trolley structures, and necessary track equipment. The 1,500-volt direct current system, with regenerative braking, is in use.

Three freight and two passenger locomotives were supplied by the Metropolitan-Vickers Electrical Company, Ltd., of Great Britain, which also carried out all the engineering work in connection with the electrification. All the locomotives are of the 0-4+4-0 type, weighing 46 tons and equipped with four motors, developing 600 horsepower. The passenger locomotives are designed to haul a 122-ton train over the entire section, while the freight locomotives, with a different gear ratio, can haul 300-ton trains over the ruling grade, when used in pairs, as compared with loads of 90 tons under steam operation.

Supply Trade

The G. M. Basford Company has moved its offices from 17 East Forty-second street to the Lincoln building, 60 East Forty-second street, New York City.

The Lincoln Electric Company, Cleveland, Ohio, has moved its Baltimore, Md., distributor's office from 432 North Calvert street to 600 North Calvert street. **T. A. Canty** is in charge of distribution in this territory.

H. S. Schroeder, formerly vice-president and general sales manager of the Interstate Iron & Steel Company, has been appointed western manager of sales for the **Republic Steel Corporation,** with headquarters at Chicago.

Benjamin Nields, Jr., sales agent for the **National Malleable & Steel Castings Company** has moved his office from 17 East Forty-second street to the Lincoln building, 60 East Forty-second street, New York City.

F. B. Archibald, vice-president of the **National Lock Washer Company,** Newark, N. J., with headquarters at 50 Church street, New York, has been transferred to 40 Hermon street, Newark, N. J., following the closing of the New York office.

John E. Chiquoine has joined the sales staff of the **Blaw-Knox Company,** Pittsburgh, Pa. Mr. Chiquoine was graduated from the University of Pennsylvania and was in the air service during the World War. He later served successively as chief engineer of the American Chemical Machinery Company and with the Industrial Engineering division of E. I. duPont de Nemours & Company, engaged in experimental and engineering development work.

G. F. Blackmer, general superintendent, and **J. A. Coakley,** general traffic manager of the **American Steel & Wire Company,** have been appointed vice-presidents, with headquarters at Cleveland, Ohio. **B. H. Lawrence,** mechanical engineer, has been promoted to chief engineer at Cleveland. **Frank Baaches,** vice-president at Chicago, has been appointed assistant to the president.

R. E. Moore has been elected a director and vice-president of the **Transportation Equipment Corporation,** 230 Park avenue, New York; he will be in charge of the production and engineering work. Mr. Moore was born at Hornell, N. Y., on February 1, 1887. He attended the Hornell High School, and was graduated as an electrical engineer from the Pratt Institute and from Columbia University. He served as a first lieutenant in the Aviation Corps during the World War. His first railroad work was in the Hornell shops of the Erie and from 1907 to 1909 he served as chief electrician of the Erie, at Jersey City. He later worked with the General Electric Company and was power engineer of the New York & Queens Electric Light & Power Company from 1914 to 1917. In 1925 he was elected vice-president of Fischbach & Moore, electrical contractors and while in this capacity he assisted in the design and

R. E. Moore

supervised the installation of the electrical work in the Holland Tunnel, designed and supervised the electrical installation work in the New York Life Insurance building and also the charging system in the Railway Express Agency station at Sunnyside yards. He also supervised other large electrical installations including the new auditorium at Atlantic City, Erie shop at Susquehanna, Pa., Buffalo terminal of the New York Central, Sunnyside yards of the Pennsylvania, and the New York Central station at Erie, Pa.

Trade Publications

ALLOY STEELS.—"Alloy Steels in the Railroad Field" is the title of a 12-page booklet issued by the International Nickel Company, 67 Wall street, New York. The booklet discusses the increase in strength with a decrease in weight attainable by the use of alloy steel for railroad forgings, castings and boiler plate; the comparative physical properties of alloy and carbon steels in such applications; economics of operation; corrosion-resisting materials; nitriding, and miscellaneous metals.

MATERIAL HANDLING. — The Elwell-Parker Electric Company, Cleveland, Ohio, has issued Bulletin No. 8, entitled "Opportunity for Cost Reduction in the Handling of Railroad Stores," which consists of several pages of illustrations of stores handling operations with electric lift trucks and skids, supplemented by text matter to show by time studies how individual operations contrast with previous methods of doing the same work. The report covers the handling of brass, air hose, brake beams, brake shoes, wheels, locomotive tires, etc.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the T. A. Allen Construction Company, Topeka, Kan., for the construction of a fire station and a cafeteria-auditorium building at Topeka. Each building will be of reinforced concrete, steel, brick and stone construction, the fire station having dimensions of 40 ft. by 81 ft. with a 56-ft. hose drying tower, while the cafeteria-auditorium building will be four stories in height with dimensions of 74 ft. by 120 ft. A contract for the construction of concrete and brick bunk houses, each one story in height and with outside dimensions of 12 ft. by 120 ft., at Emporia Junction, Kan., Gardner, Spencer and Toronto and at Marland, Okla., and Waterloo has been let to the George Senne Construction Company, Topeka, Kan.

BANGOR & AROOSTOOK.—This company has authorized construction work involving a total cost of approximately $234,000. Of this amount, $100,000 will be spent for alterations and additions to its yard at Millinocket, Me., while the remaining $134,000 is allotted to renewal and strengthening work on 14 bridges. All of the work will be done by company forces.

CANADIAN NATIONAL (Hudson Bay).—A contract has been let to the Carter-Halls-Aldinger Company, Winnipeg, Man., by the Department of Railways and Canals of Canada, for the construction of a 2,500,000-bu. grain elevator at Churchill, Man. A contract for the construction of the substructure of the elevator has been awarded to the Thunder Bay Harbor Improvement Company, Port Arthur, Ont., at a cost of about $300,000. The total cost of the project is estimated at more than $2,000,000.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been let to Arthur H. Neumann, Des Moines, Iowa, for the construction of a 10-stall addition to the roundhouse, a new storehouse and a new roundhouse office, all of which will be built of brick, at East Des Moines, Iowa. A contract for the construction of a water-treating plant at the same point has been awarded to the Railroad Water & Coal Handling Company, Chicago.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—A contract has been let to the Graver Tank & Manufacturing Corporation, East Chicago, Ind., for the construction of a water softener at Mankato, Minn., which will have a softening capacity of 35,000 gal. per hr. The settling tank will be 31 ft. 6 in. in diameter by 62 ft. high and will have a storage capacity of 185,000 gal.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—A contract for the construction of a repair shop building with dimensions of 184 ft. by 444 ft. at Beech Grove (Indianapolis), Ind., has been awarded

to the Ellington-Miller Company, Chicago. The building will involve an expenditure of about $160,000.

CORPUS CHRISTI, SAN ANGELO & ROSWELL.—This company has filed its charter with the secretary of state of Texas, which provides for the construction of a railroad between the Gulf of Mexico, at Corpus Christi, Tex., and Roswell, N. M., approximately 725 miles. It is proposed first to construct a line between Corpus Christi and San Angelo, Tex., about 375 miles.

ERIE.—The Public Service Commission of New York has directed the elimination of the grade crossing of the Erie and the Spring Valley-Suffern highway, Ramapo, N. Y., by carrying the highway over the railroad 150 ft. west of the existing crossing at an estimated cost of $116,000.

KENTUCKY & INDIANA TERMINAL.—This company will receive bids up to noon June 25 for the excavation, embankment, masonry and steel work required for the elevation of its roadbed and tracks, adjustment of industrial siding connections and construction of underpasses for six streets between Market and Kentucky streets, Louisville, Ky. The work involves about 16,000 cu. yd. of excavation, the placing of approximately 117,000 cu. yd. of embankment and of about 8,000 cu. yd. of plain and reinforced concrete, and the erection of 800 tons of structural steel.

LEHIGH VALLEY.—A contract for the construction, at Manchester, N. Y., of a water softener with softening capacity of 68,000 gal. per hour and a storage capacity of 150,000 gal. has been let to the Graver Tank & Manufacturing Corporation, East Chicago, Ind. The settling tank will be 47 ft. in diameter by 49 ft. high.

MEXICO.—The Mexican government has granted a concession to Jose M. Sanchez, Mexico City, D. F., for the construction of a railroad between Santa Lucrecia, Ver. C., on the National of Mexico, and Campeche. Cam., the western terminus of the United Railways of Yucatan, about 528 miles. It is also planned to construct branch lines between Frontera, Tab., on the Bay of Campeche, and Tonala, Chis., on the National of Mexico near the coast of the Gulf of Tehuantepec, approximately 230 miles, and between Jalapa, Ver. C., and Villa Hermosa, about 75 miles. The terms of the concession provide that the surveys shall be completed within two years and that construction shall be started within four months from that time. The entire construction must be completed within 20 years from the date of the concession.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved the award by this company to Bates & Rogers, New York, of the contract for the elimination of the Thompson road grade crossing, Syracuse, N. Y. The construction of a viaduct at this point, the first major project in the grade crossing elimination and track relocation program in Syracuse, will cost approximately $420,000.

NEW YORK CENTRAL.—The New York Public Service Commission has directed the elimination of the Butts crossing, Brighton, N. Y., by carrying the highway under the railroad tracks, and of the Weedsport road crossing, Brutus, N. Y., by carrying the highway over the tracks on a plate girder bridge with a total length of 344 ft. The cost of the latter project is estimated at $178,600.

NEW YORK, ONTARIO & WESTERN.—Elimination of the grade crossing of this company's tracks at East Seneca street, Oswego, N. Y., has been directed by the Public Service Commission of New York. The work is to be accomplished by carrying the street over the eight tracks of the railroad at this point on a 400-ft. concrete and plate girder bridge, costing about $175,000.

PENNSYLVANIA.—Elimination of the Sand Hill crossing of the Pennsylvania near Genesee Junction, N. Y., has been directed by the New York Public Service Commission. The plan approved involves carrying the highway over the tracks on its present line, at an estimated cost of $136,000.

SACRAMENTO NORTHERN.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the extension of its Holland line to Ryde, in Yolo county, Cal., 8.3 miles.

ST. LOUIS-SAN FRANCISCO.—The Interstate Commerce Commission has authorized this company to construct an extension to its Shamrock branch in a generally northerly direction to an oil refinery near Drumright, Okla., 3 miles; estimated cost of construction, $124,508.

ST. LOUIS SOUTHWESTERN.—The Interstate Commerce Commission has authorized this company to construct an extension to its line from a point near Caraway, Ark., to Truman, to acquire the line of the Arkansas Short Line and to operate under trackage rights over the Missouri Pacific between Fair Oaks and Bridge Junction, Ark. Its application to acquire a portion of the property of the Cairo, Truman & Southern has been dismissed and the latter company is authorized to abandon portions of its line. The Manila & Southwestern is likewise authorized to abandon its line as to interstate and foreign commerce. The construction and acquisition will reduce the distance via the Cotton Belt between St. Louis and Memphis from 411 miles to 353 miles and will permit further development of a rich agricultural area.

THE FORT WAYNE (IND.) RAILWAY CLUB has elected the following officers for the ensuing year: President, W. J. Spangle, assistant trainmaster of the Pennsylvania; vice-president, Harry Coleman, equipment supervisor of the Indiana Service Corporation; secretary-treasurer, G. R. Brittenham, railroad secretary of the Y. M. C. A. (re-elected).

Financial

ARKANSAS SHORT LINE.—*Removed from Consolidation Plan.*—The Interstate Commerce Commission has announced an amendment of its consolidation plan by omitting the name of this road on the ground that it was not engaged in interstate commerce.

ATLANTIC CITY. — *Acquisition.* — This company has applied to the Interstate Commerce Commission for authority to acquire control of the Wildwood & Delaware Bay Short Line by purchase of a majority of its capital stock and bonds for $398,760. The line extends from Wildwood to Wildwood Junction, N. J., 4 miles.

ATLANTIC COAST LINE.—*Abandonment.*—This company has petitioned the Interstate Commerce Commission for a rehearing on its application for authority to abandon its line from Yuste to Monticello, Fla., 4.8 miles, as to which the commission recently held it had no jurisdiction because the line had been abandoned previously without authority. The petition says the federal commission has plenary and exclusive jurisdiction over the abandonment even if it was initially without authority, and also over the question of the possible restoration and subsequent operation of the line.

The company has also filed an application for a certificate authorizing it to build the line again, if the commission should find that public convenience and necessity requires it, stating that the supreme court of Florida has issued a mandamus directing it to restore service until permission for the abandonment has been lawfully obtained from the commission.

BOSTON & MAINE.—*Stock.*—This company has applied to the Interstate Commerce Commission for authority to issue 75,000 shares of 7 per cent prior preference stock to be exchanged for convertible general mortgage bonds.

CHESAPEAKE & OHIO. — *Stock.* — The Interstate Commerce Commission has authorized this company to issue $18,152,400 of common capital stock and sell in addition thereto $20,142,200 of common capital stock, which latter was received in exchange for Hocking Valley stock. The stock will be offered for sale pro rata to the common stockholders of the company for cash at $100 par at the rate of one new share for each share held.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized the Chicago, Rock Island & Gulf to issue $5,691,000 of extension first mortgage bonds to be delivered to the parent company at par in satisfaction of a like amount of indebtedness for construction advances.

DENVER & RIO GRANDE WESTERN.—*Bonds.*—This company has applied to the

(*Continued on page 1352*)

Annual Report

Thirty-third Annual Report of the Northern Pacific Railway Company

Office of the
NORTHERN PACIFIC RAILWAY COMPANY,
St. Paul, Minnesota, April 25, 1930.

To the Stockholders of the
Northern Pacific Railway Company:

The following, being the thirty-third annual report, shows the result of the operation of your property for the year ending December 31, 1929.

Income Account

	1929	1928	Increase—I Decrease—D	
Average mileage operated..	6,789.52	6,729.84	I	59.68
Operating Income.				
Operating revenues.....	$96,522,348.22	$101,272,723.78	D	$4,750,375.56
Operating expenses.....	70,551,664.61	70,801,966.02	D	250,301.41
Net operating revenue.	25,970,683.61	30,470,757.76	D	4,500,074.15
Railway tax accruals.....	9,210,938.51	9,688,173.23	D	477,234.72
Uncollectible railway revenues	20,739.09	20,681.25	I	57.84
Railway operating income	16,739,006.01	20,761,903.28	D	4,022,897.27
Equipment rents—net	2,297,562.79	1,985,490.66	I	312,072.13
Joint facility rent—net....	2,373,775.29	2,341,177.85	I	32,597.44
Net railway operating income	21,410,344.09	25,088,571.79	D	3,678,227.70
Nonoperating Income.				
Income from lease of road.	333,349.58	333,342.35	I	7.23
Miscellaneous rent income.	558,358.94	502,743.19	I	55,615.75
Miscellaneous nonoperating physical property	229,616.24	244,131.18	D	14,514.94
Dividend income	12,833,745.15	9,333,797.05	I	3,499,948.10
Income from funded securities	808,502.25	599,426.52	I	209,075.73
Income from unfunded securities and accounts....	710,081.05	292,687.66	I	417,393.39
Miscellaneous income	11,015.90	14,390.50	D	3,374.60
Total nonoperating income	15,484,669.11	11,320,518.45	I	4,164,150.66
Gross income	36,895,013.20	36,409,090.24	I	485,922.96
Deductions from Gross Income. (exclusive of fixed charges)				
Miscellaneous tax accruals.	128,908.33	132,904.17	D	3,995.84
Miscellaneous income charges	209,410.05	206,779.36	I	2,630.69
Total of above deductions	338,318.38	339,683.53	D	1,365.15
Amount available for fixed charges and other corporate purposes	36,556,694.82	36,069,406.71	I	487,288.11
Fixed Charges.				
Rent for leased roads.....	51,470.65	51,470.65		.....
Miscellaneous rents	84,441.02	74,849.29	I	9,591.73
Interest on funded debt...	14,569,073.55	14,646,254.70	D	77,181.15
Interest on unfunded debt.	13,680.75	131,682.09	D	118,001.34
Amortization of discount on funded debt	29,720.37	31,939.79	D	2,219.42
Total fixed charges...	14,748,386.34	14,936,196.52	D	187,810.18
Net income	21,808,308.48	21,133,210.19	I	675,098.29
Dividend requirements	12,400,000.00	12,400,000.00		.....
Balance for the year..	9,408,308.48	8,733,210.19	I	675,098.29

Earnings

Freight Business

Freight revenue was $76,862,142.23, a decrease of $4,862,834.25, or 5.95 per cent.

The number of tons of revenue freight carried was 23,157,702, a decrease of 931,557, or 3.87 per cent.

6,594,488,825 tons of revenue freight were moved one mile, a decrease of 457,573,146 tons one mile, or 6.49 per cent.

The average revenue per ton mile increased, by reason of changes in traffic movement, from 1.159 cents to 1.166 cents.

The revenue train load decreased from 695.87 to 670.85 tons. The total train load, including company freight, decreased from 807.43 to 783.78 tons.

The number of miles run by revenue freight trains, including proportion of mixed, was 9,829,996, a decrease of 304,184, or 3.00 per cent.

Passenger Business

Passenger revenue was $9,820,918.24, a decrease of $911,912.01, or 8.50 per cent.

Mail revenue was $2,765,576.71, an increase of $964,565.90, or 53.56 per cent. There was included in 1929 mail revenue, $813,169.60, account of increased payment for carrying mail, during period of May 9, 1925, to July 31, 1928.

Express revenue was $1,938,819.21, an increase of $15,086.89, or .78 per cent.

Sleeping car, parlor and chair car, excess baggage and miscellaneous passenger revenue was $938,679.07, a decrease of $32,852.15, or 3.38 per cent.

Total revenue from persons and property carried on passenger and special trains was $15,463,993.23, an increase of $34,888.63, or .23 per cent.

The number of passengers carried was 1,932,710, a decrease of 270,859, or 12.29 per cent. The number of passengers carried one mile was 322,096,719, a decrease of 25,917,132, or 7.45 per cent. The average revenue per passenger mile decreased from 3.084 to 3.049 cents.

Maintenance of Equipment

The charges for maintenance of equipment were $18,755,104.86, an increase of $54,794.19, or .29 per cent. Of the total charges $4,249,398.60 represents depreciation, accrued at the rate of 4 per cent.

Locomotives

Total number of locomotives on active list, December 31, 1928		1,132
Additions:		
Locomotives purchased		1
		1,133
Deductions:		
Locomotives sold	5	
Locomotives withdrawn from service, to be dismantled....	40	
Locomotives transferred to work equipment.....	1	46
Total locomotives on active list, December 31, 1929....		1,087
In addition to locomotives on active list there were:		
Withdrawn from service and on hand December 31, 1928..	24	
Withdrawn from service during the year.....	40	64
Less—Dismantled		48
Leaving on hand locomotives withdrawn from service which may be sold or dismantled.....		16

EARNINGS AND EXPENSES PER MILE OPERATED

	1917	1925	1926	1927	1928	1929
Operating revenues per mile	$13,526.37	$14,620.55	$14,568.38	$14,329.17	$15,048.31	$14,216.37
Operating expenses per mile	8,171.39	10,453.59	10,215.11	10,173.20	10,520.60	10,391.26
Net operating revenue per mile	5,354.98	4,166.96	4,353.27	4,155.97	4,527.71	3,825.11
Taxes per mile	1,059.52	1,396.39	1,369.45	1,335.41	1,439.59	1,356.64
Net after taxes	4,295.46	2,770.57	2,983.82	2,820.56	3,088.12	2,468.47

RATIOS.

	1917	1925	1926	1927	1928	1929
Operating expenses to operating revenues.....	60.41%	71.50%	70.12%	71.00%	69.91%	73.09%
Transportation expenses to operating revenues....	32.34%	34.27%	33.17%	33.38%	32.41%	33.51%
Taxes to operating revenues	7.83%	9.55%	9.40%	9.32%	9.57%	9.54%

[Advertisement]

Hauling Capacity

	Number	Tractive power (Pounds)	Total weight on drivers (Pounds)	Total weight of locomotives (Pounds)
Assignment December 31, 1928	1,132	47,966,680	208,166,517	268,471,402
Added during year—purchased	1	140,000	553,000	717,000
Added during year *	....	275,500	598,800	1,321,750
Total	1,133	48,382,180	209,318,317	270,510,152
Locomotives sold or withdrawn from service	46	1,398,020	6,235,950	7,844,300
Total December 31, 1929	1,087	46,984,160	203,082,367	262,665,852

* Account engines having superheaters, boosters, feedwater heaters, thermic syphons and stokers applied; changes in size of cylinders and steam pressure increased.

The following statement shows the character and condition of the locomotives of the Company on December 31, 1929.

	December 31, 1929		December 31, 1928	
Condition	Number	Per cent	Number	Per cent
Good	917	84.36	950	83.92
Fair	67	6.16	66	5.83
At shops or awaiting shop	80	7.36	95	8.39
Unserviceable, awaiting disposition	23	2.12	21	1.86
	1,087	100.00	1,132	100.00
Number of oil burning locomotives	23	2.12	21	1.86
Number of locomotives equipped with superheaters	819	75.34	812	71.73
Number of locomotives equipped with stokers	282	25.94	283	25.00
Number of locomotives equipped with boosters	44	4.05	42	3.71

The purchase of eleven additional four cylinder simple Mallet locomotives of the Yellowstone type has been authorized. Delivery is expected early in 1930.

Freight car situation on December 31st

	1929	1928	Increase—I Decrease—D
Northern Pacific cars on line	40,940	38,932	I 2,008
Foreign cars on line	5,981	8,322	D 2,341
Total cars on line	46,921	47,254	D 333
Northern Pacific cars on foreign lines	9,452	10,634	D 1,182
Number of cars unserviceable	3,305	3,183	I 122
Percentage of unserviceable to total cars on line	7.04	6.73	I .31
Number of cars requiring heavy repairs	1,994	1,741	I 253
Percentage of above to total cars on line	4.25	3.68	I .57
Number of cars requiring light repairs	1,311	1,442	D 131
Percentage of above to total cars on line	2.79	3.05	D .26

Maintenance of Way and Structures

The charges for maintenance of way and structures were $12,203,551.18, a decrease of $393,302.07, or 3.12 per cent.

The following statements give particulars of some of the work done.

Permanent Way

	Year 1929	Year 1928
New branch lines laid with 90 pound rail, second hand ..... miles	.69	103.56
Main line relaid with 130 pound rail ..... miles	4.56	6.18
Main line relaid with 100 pound rail ..... miles	108.19	105.59
Main line relaid with 90 pound rail, second hand ..... miles	21.73	2.25
Second track relaid with 130 pound rail ..... miles	.31	2.31
Second track relaid with 100 pound rail ..... miles	2.24	17.33
Second track relaid with 90 pound rail ..... miles	.16	.02
Branch lines relaid with 100 pound rail ..... miles	.02	.....
Branch lines relaid with 90 pound rail, second hand ..... miles	9.63	55.06
Branch lines relaid with 85 pound rail, second hand ..... miles	10.57	4.48
Sidings and spurs constructed ..... miles	39.56	54.23
Track ballasted with washed gravel ..... miles	141.65	177.92
Track ballasted with washed gravel ..... Cubic yards	411,224	496,019
Track ballasted with bank-run gravel ..... miles	78.68	172.85
Track ballasted with bank-run gravel .... Cubic yards	163,720	253,102
Track ballasted with bank-run gravel (patch or repairs) ..... Cubic yards	23,467	52,291
Embankments widened ..... miles	99.04	132.83
Embankments widened ..... Cubic yards	245,270	291,019
Cross, bridge and switch tie renewals, main line ..ties	981,610	1,013,085
Cross, bridge and switch tie renewals, branch lines ..... ties	651,110	716,940
Timber bridges replaced by permanent structures and embankments	58	50
Equal to ..... miles	1.81	1.33
Timber bridges renewed	37	32
Timber culverts renewed	7	16
Timber culverts replaced in permanent form	120	127
New stock fences constructed ..... miles	34.97	47.63
New snow fences constructed ..... miles	.46	1.80

Rail in Main, Second, Third and Fourth Tracks

Weight	Main line Miles	Branches Miles	Second, third and fourth track Miles	Total miles Dec. 31, 1929	Total miles Dec. 31, 1928
130 pound steel	62.86	.....	9.26	72.12	67.70
100 pound steel	884.43	1.26	64.19	949.88	845.82
90 pound steel	1,672.79	579.99	520.93	2,773.71	2,850.72
85 pound steel	234.38	779.13	27.78	1,041.29	1,034.97
80 pound steel	1.24	.....	.44	1.68	1.70
72 pound steel	69.36	1,043.97	8.15	1,121.48	1,124.52
70 pound steel	.....	48.23	.....	48.23	48.23
66 and 67 pound steel	19.97	377.77	.99	398.73	437.90
60 pound steel	2.47	22.16	.....	24.63	24.77
56 pound steel	.87	702.14	.16	703.17	706.91
Total	2,948.37	3,554.65	631.90	7,134.92	7,143.24

Bridges

101 bridges were replaced, 37 of which, 7,622 linear feet in length, were replaced by timber, and 6 permanent and 58 timber structures were replaced in permanent form, as follows:

Replaced by embankment	34 bridges,	5,663 linear feet
Replaced by steel truss, girder and reinforced concrete trestle	30 bridges,	4,846 linear feet
Total	64 bridges,	10,509 linear feet

In addition to changes referred to above, 6 temporary bridges were added, 127 culverts were rebuilt, 7 in temporary and 120 in permanent form. Thirty-two I-beam bridges, with a total of 1,465 linear feet, were reinforced with additional I-beams to carry standard loading.

Bridges as they existed December 31, 1929

Description	Number	Linear feet	Miles
Steel, iron, stone and concrete permanent bridges	923	159,442	30.20
Timber, and combination iron and timber structures	2,362	336,848	63.79
Total	3,285	496,290	93.99

Total length of timber structures replaced by steel bridges, embankments, or other permanent form, from July 1, 1885, when work was commenced, to December 31, 1929, 155.58 miles.

There are now under construction 1,298 linear feet of steel girder and I-beam spans for single track, and 165 linear feet for double track, 324 linear feet of reinforced concrete trestle for single track, and 153 linear feet for double track.

Buildings

New buildings and structures or increased facilities have been provided at the following stations:

Minnesota: Brainerd, Cushing, Duluth, Northtown, and St. Paul.

North Dakota: Bismarck, Buffalo, Dazey, Deapolis, De Lamere, Fargo, Glenullen, Grand Forks, Gwinner, Jamestown, Lisbon, Mandan, New Rockford, Sunny, and Zap.

Montana: Belgrade, Big Timber, Bozeman, Colstrip, Dyk, Glendive, Kenspur, Laurel, Livingston, McClain, Missoula, Penwell, Plains, Pompeys Pillar, Sidney, Story, Townsend, Whitehall, and Wilsall.

Idaho: Moscow.

Washington: Aberdeen, Chehalis, Cheney, Grand Mound, Granger, Holmes, Palouse, Parkwater, Pasco, Puyallup, Rosalia, Seattle, South Tacoma, Sunnyside, Tacoma, Thorp, Toppenish, and Yakima.

Water Supply

Water treating plants have been installed at Billings, Forsyth, and Laurel, Montana.

Water treating plants are under construction at Sterling, North Dakota; Dowlin, Glendive, Intake, and Sidney, Montana.

Improvements were made in water stations at Superior, Wisconsin; Wyoming, Minnesota; Rivulet and Springdale, Montana; Rathdrum and Kendrick, Idaho; Almira, Battle Ground, Belmont, Davenport, Palouse, Reardon, Shelton, and Wheeler, Washington.

Fuel Stations

New coal docks of steel construction have been completed at Koldok, North Dakota; and Greycliff, Montana.

Improvements have been made in coal docks at Beach, Dickinson, Glenullen, and Mandan, North Dakota; Garrison, Helena, Laurel, Livingston, and Logan, Montana; and Ellensburg, Washington.

Block Signals and Interlockers

A mechanical interlocking plant has been installed at Tacoma (Reservation), Washington, at junction with tracks of the O. W. R. R. & N. Co.

Three-position color light block signals have been placed in service between DeSmet and Paradise, via Evaro, Montana, 62.8 miles of single track. Similar signals are being installed

[ADVERTISEMENT]

between Tacoma and Tenino, Washington, 43.8 miles of double track, and will be placed in service early in 1930.

On five miles of double track between St. Paul and Minneapolis, the semaphore type automatic block signals have been replaced by color light signals.

The lighting of automatic block signals has been changed from oil lamps to approach lighting electric lamps, between Northtown and Little Falls, Minnesota; Livingston and Garrison, and Paradise and Thompson Falls, Montana; Hauser, Idaho, and Cheney, Washington; Ravensdale and Auburn, and Tenino and Vancouver, Washington.

Separation of Grades

At Superior, Wisconsin, a viaduct 560 feet in length is being constructed to carry 21st Street over tracks, and will be completed early in 1930.

At Duluth, Minnesota, a concrete bridge 388 feet in length, with 560 feet of pile trestle approach, carrying Lesure Street over tracks, has been completed.

At St. Paul, Minnesota, the old steel bridge carrying East Seventh Street over East Side Line and other tracks, has been replaced with reinforced concrete structure.

Miscellaneous

At Laurel, Montana, the main tracks which formerly ran through the yard have been changed to location north of the yard tracks, eliminating crossovers and other switching interference, and permitting removal of interlocking plant.

General

Financial Results of Operation

The Net Railway Operating Income of the Company in 1929 was $21,410,344.09, a decrease of $3,678,227.70, or 14.66% under 1928. The Net Income of the Company in 1929, after paying all charges, was $21,808,308.48, an increase of $675,098.29, or 3.19% over 1928.

The Operating Revenues of the Company decreased $4,750,375.56, or 4.69%, compared with 1928, due to a short grain crop and to the general depression in business during the latter part of the year. Operating Expenses decreased $250,301.41, or .35%, notwithstanding unusual charges aggregating $1,500,000, made up principally of wage increases, repairs in washout territory in Eastern Montana, additional passenger train mileage, and accounting adjustments. If it had not been for these unusual charges Operating Expenses would have decreased $1,750,301.41, or 2.47%.

Return on Property Investment

Year ending December 31,	Railway Property Investment including Material and Supplies and Working Cash at end of Year.	Net Railway Operating Income.	Return on Investment Per Cent.
1916	$519,390,340	$33,446,012	6.439
1917	524,278,065	30,491,140	5.816
1918	531,518,194	24,217,342	4.556
1919	532,312,282	14,368,479	2.699
1920	547,614,271	7,949,458	1.452
1921	559,236,547	10,843,826	1.939
1922	557,966,448	19,450,515	3.486
1923	581,455,528	17,100,557	2.941
1924	586,395,122	19,861,077	3.387
1925	596,316,581	22,227,319	3.727
1926	608,490,106	24,213,700	3.979
1927	617,172,925	22,592,837	3.661
1928	624,378,240	25,088,572	4.018
1929	632,230,551	21,410,344	3.386

In previous reports mention was made of the investigation by the Interstate Commerce Commission of the class rates in western trunk line territory, which, as defined by the Commission, includes the territory served by the Northern Pacific in Wisconsin, Minnesota and North Dakota. During the year examiners of the Commission issued a proposed report, in which they found that the carriers concerned were in need of additional revenues and that the class rate structure in western trunk line territory was generally too low and should be revised. The basis proposed by the examiners would in general increase the local rates but would substantially reduce the overhead rates between the east and the middle west. Exceptions to the proposed report were filed and the case was orally argued before the Commission during the latter part of October. The proceeding has been under advisement by the Commission since that time.

Valuation Work

In October, 1929, the Interstate Commerce Commission made public its report of final value of your campany's properties as of June 30, 1917.

The value of property used for transportation purposes was found to be $418,551,760, and of properties not used for transportation purposes, $65,556,187. The Commission also found that on the date named your company had invested in securities $183,401,044 but did not undertake to value these securities.

It should be understood that in making its report of final value as of June 30, 1917, the Commission used the unit prices for labor and material prevailing in 1914 and the years immediately preceding, and gave no weight to the higher level of prices which now prevails. In May, 1929, the Supreme Court of the United States rendered its decision in a case involving the recapture of earnings of the St. Louis & O'Fallon Railway Company, holding that in finding the value of railroad properties the Commission must give consideration to present-day costs of reproduction. The Commission has not yet indicated what steps it will take to give effect to the decision in the O'Fallon case.

Based on the Commission's finding of value as of June 30, 1917, the following table shows a comparison between the property owned by your company on December 31, 1929, and the outstanding capitalization on that date:

PROPERTY		CAPITALIZATION	
Property used for transportation purposes valued by the Commission as of June 30, 1917	$418,551,760	Capital stock	$248,000,000
Additions and betterments from June 30, 1917, to December 31, 1929	110,913,210	Funded debt in hands of public	315,424,500
Other property valued by the Commission not used for transportation purposes	59,380,446	Excess of property over capitalization	218,819,556
Investments in affiliated companies and other investments	193,398,640		
Total	$782,244,056	Total	$782,244,056

Land Department

The results of the operations of the Land Department for the year are not as good as those of the preceding year. There was a marked decrease in the sale of timber and timber lands. There was also a decrease in the sale of agricultural lands of the higher quality.

During the year 249,492.31 acres were sold as compared with 233,891.28 acres sold in 1928, an increase of 6.67%. The total of land, town lot, timber and miscellaneous sales, in 1929 amounted to $2,246,935.32 as compared with $3,226,477.35 in 1928, a decrease of 30.36%. This is accounted for by fewer timber sales and a larger acreage of low priced land sold in 1929. Contracts covering 49,016.98 acres, representing $211,026.90, were cancelled, as compared with cancellations in 1928 of 51,341.70 acres, representing $428,647.27.

Taxes

The following statement shows taxes accrued each year during the past four years:

	1926	1927	1928	1929
State taxes	$7,627,522.69	$7,657,980.10	$8,199,054.42	$8,189,577.39
Federal taxes	1,484,402.25	1,207,638.23	1,449,562.01	980,722.06
Canadian and miscellaneous taxes	39,222.05	41,505.33	39,556.80	40,639.06
Total	$9,151,146.99	$8,907,123.66	$9,688,173.23	$9,210,938.51

Comparative Statement of Payrolls and Employees

A comparison of payrolls and number of employees for a period of years ending December 31, follows:

	Payrolls.	Number of Employees.
1916	$28,204,669	28,899
1917	35,877,879	31,887
1918	49,632,127	32,228
1919	52,605,396	33,700
1920	66,503,794	35,553
1921	50,643,526	28,911
1922	49,041,401	27,899
1923	51,921,572	31,344
1924	45,950,886	27,133
1925	46,188,348	26,831
1926	44,938,046	26,111
1927	44,952,702	25,728
1928	46,261,766	25,841
1929	45,962,423	25,403

Security Owners

There are now 37,480 owners of stock and about 30,000 owners of bonds of the Company.

As showing the diversity of holdings, the following figures are given:

19,061 hold from 1 to 19 shares;
12,642 hold from 20 to 99 shares;

31,703 or 84.59% hold less than 100 shares each;
5,777 hold 100 or more shares.

Total 37,480

[Advertisement]

Of the above stockholders 15,895 are women;
2,949 are savings banks, insurance companies, trustees, guardians, colleges, and charitable institutions.

Improvement in Equipment

On December 31, 1929, the Company had 50,392 freight cars with a total capacity of 2,063,345 tons, and an average capacity of 40.95 tons. The following tabulation shows a comparison of freight car construction:

	March 1, 1920	Dec. 31, 1929
Cars new or rebuilt since March 1, 1920		40,511
Cars with steel center sills	18,860	23,121
Cars with steel underframes	3,773	14,564
Cars—all steel construction	3,795	4,681
Cars with metal roofs	19,094	31,352
Cars with steel ends		6,475

All classes of equipment, including locomotives, have been adequately maintained and are in good condition. Eight hundred and nineteen locomotives are equipped with superheaters, and two hundred and eighty-two are equipped with mechanical stokers. The total tractive power of locomotives on December 31, 1929, was 46,984,160 pounds, an average of 43,224 pounds.

Financial Condition

During the past year outstanding securities amounting to $1,335,000 have been retired, reducing the funded debt from $316,759,500 to $315,424,500. The net expenditures for additions and betterments amounted to $7,351,829. Since December 31, 1915, $120,109,959 have been expended on additions and betterments to the property. In the same period, not considering the increase in debt due to the refunding of the Northern Pacific-Great Northern (C. B. & Q. Collateral) Joint 4's in 1921, the total debt outstanding in the hands of the public decreased $8,808,400. Excepting certain Equipment Trust Certificates and Branch Line Bonds, totaling $7,304,000, which mature from time to time between now and the year 1968, none of the Company's funded debt will mature before 1996, and the larger part of it will not mature until 2047.

Pension Department

On December 31, 1929, there were on the retired list 773 employees, whose average monthly allowance was $53.19. During the year 124 employees were added to the list, and 71 died. The total amount disbursed during the year was $470,820.57.

Unification of Northern Pacific Railway Company and Great Northern Railway Company

As you were informed in the notice from the Deposit Committee dated March 21, 1930, the Interstate Commerce Commission has authorized the unification of the Northern Pacific and Great Northern lines on the conditions stated in that notice. A study is now being made to determine whether those conditions can be met.

By order of the Board of Directors,
CHARLES DONNELLY,
President.

Northern Pacific Railway Company
General Balance Sheet, December 31, 1929

ASSETS

	1929	1928	+ Increase — Decrease
INVESTMENTS.			
ROAD AND EQUIPMENT.			
Road	$476,684,814.68	$473,574,001.00	+ $3,110,813.68
Equipment	123,237,077.33	119,354,055.39	+ 3,883,021.94
General	4,095,726.43	3,716,189.38	+ 379,537.05
	604,017,618.44	596,644,245.77	+ 7,373,372.67
DEPOSITS IN LIEU OF MORTGAGED PROPERTY SOLD (Net moneys in hands of Trustees from sale of land grant lands, etc.)	657,679.93	340,524.89	+ 317,155.04
MISCELLANEOUS PHYSICAL PROPERTY	10,936,249.01	11,271,177.76	— 334,928.75
INVESTMENTS IN AFFILIATED COMPANIES.			
Stocks	144,087,485.01	144,085,285.01	+ 2,200.00
Bonds	33,695,747.75	30,198,047.75	+ 3,497,700.00
Notes	2,472,761.17	2,264,761.17	+ 208,000.00
Advances	3,823,774.88	3,665,322.51	+ 158,452.37
	184,079,768.81	180,213,416.44	+ 3,866,352.37
OTHER INVESTMENTS.			
Stocks	8,631.00	301.00	+ 8,330.00
Bonds	1,871,551.54	2,430,587.17	— 559,035.63
U. S. Treasury notes and certificates	2,387,068.76	1,970,962.50	+ 416,106.26
Contracts for sale of land grant lands	5,051,620.02	4,616,762.23	+ 434,857.79
	9,318,871.32	9,018,612.90	+ 300,258.42
Total Capital Assets	809,010,187.51	797,487,977.76	+ 11,522,209.75
CURRENT ASSETS.			
Cash	15,434,625.61	14,300,067.65	+ 1,134,557.96
Special deposits	5,275,991.00	5,287,381.00	— 11,390.00
Loans and bills receivable	1,920.35	9,954.34	— 8,033.99
Traffic and car service balances receivable	1,419,849.59	1,725,017.80	— 305,168.21
Net balances receivable from agents and conductors	745,067.79	855,494.39	— 110,426.60
Miscellaneous accounts receivable	3,157,118.39	3,452,075.62	— 294,957.23
Material and supplies	10,933,802.13	11,353,490.37	— 419,688.24
Interest, dividends and rents receivable	106,974.25	87,556.85	+ 19,417.40
Other current assets	79,959.42	86,671.55	— 6,712.13
Total Current Assets	37,155,308.53	37,157,709.57	— 2,401.04
DEFERRED ASSETS.			
Working fund advances	44,341.34	44,344.23	— 2.89
Other deferred assets	101,056.74	73,821.94	+ 27,234.80
Total Deferred Assets	145,398.08	118,166.17	+ 27,231.91
UNADJUSTED DEBITS.			
Discount on funded debt	2,315,916.59	2,345,586.91	— 29,670.32
Other unadjusted debits	17,820,222.37	16,572,476.55	+ 1,247,745.82
Total Unadjusted Debits	20,136,138.96	18,918,063.46	+ 1,218,075.50
Grand Total	866,447,033.08	853,681,916.96	+ 12,765,116.12

LIABILITIES

	1929	1928	+ Increase — Decrease
STOCK.			
Capital stock—common	$248,000,000.00	$248,000,000.00	.....
GOVERNMENTAL GRANTS.			
Grants in aid of construction	474,733.34	485,236.10	— $10,502.76
LONG TERM DEBT.			
Funded debt	332,600,000.00	333,935,000.00	— 1,335,000.00
Less—held by or for the Company	17,175,500.00	17,175,500.00	.....
	315,424,500.00	316,759,500.00	— 1,335,000.00
Total Capital Liabilities	131,232.55	166,682.00	— 35,449.45
CURRENT LIABILITIES.			
Traffic and car service balances payable	724,898.47	885,327.62	— 160,429.15
Audited vouchers and wages payable	6,260,285.75	5,547,063.83	+ 713,221.92
Miscellaneous accounts payable	619,835.77	701,312.77	— 81,477.00
Interest matured unpaid	5,278,929.00	5,290,319.00	— 11,390.00
Unmatured dividends declared	3,100,000.00	3,100,000.00	.....
Unmatured interest accrued	361,351.04	375,966.66	— 14,615.62
Unmatured rents accrued	7,456.59	7,456.57	+ .02
Other current liabilities	72,974.50	110,122.12	— 37,147.62
Total Current Liabilities	16,425,731.12	16,017,568.57	+ 408,162.55
DEFERRED LIABILITIES.			
Other deferred liabilities	131,232.55	166,682.00	— 35,449.45
Total Deferred Liabilities	131,232.55	166,682.00	— 35,449.45
UNADJUSTED CREDITS.			
Tax liability	9,969,783.90	9,326,781.79	+ 643,002.11
Accrued depreciation of equipment	52,526,285.28	49,472,390.28	+ 3,053,895.00
Other unadjusted credits	15,791,644.04	14,664,372.63	+ 1,127,271.41
Total Unadjusted Credits	78,287,713.22	73,463,544.70	+ 4,824,168.52
CORPORATE SURPLUS.			
Additions to property through income and surplus	949,524.66	774,413.46	+ 175,111.20
Funded debt retired through income and surplus	17,500,395.79	17,321,395.79	+ 179,000.00
Miscellaneous fund reserves	271,620.87	327,479.26	— 55,858.39
Total Appropriated Surplus	18,721,541.32	18,423,288.51	+ 298,252.81
Profit and loss balance	188,981,581.53	180,366,097.08	+ 8,615,484.45
Total Corporate Surplus	207,703,122.85	198,789,385.59	+ 8,913,737.26
Grand Total	866,447,033.08	853,681,916.96	+ 12,765,116.12

[ADVERTISEMENT]

Financial News

(*Continued from page 1347*)

Interstate Commerce Commission for authority to procure the authentication and delivery of and to pledge $718,000 of refunding and improvement mortgage 5 per cent bonds.

DENVER & RIO GRANDE WESTERN.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue $893,400 of 5 per cent promissory notes maturing in installments from 1931 to 1935. The issue is to be delivered to the American Locomotive Company in partial payment for ten Mallet type 2-8-8-2 locomotives.

DENVER & SALT LAKE.—*New Directors.*—Thomas M. Schumacher, chairman of the executive committee of the Western Pacific; L. W. Baldwin, president of the Missouri Pacific; E. N. Durham, senior vice-president of the Missouri Pacific and E. W. Mason, vice-president and general manager of the Western Pacific were elected members of the board of directors at the annual stockholders meeting at Denver, Colo., on May 23. They replace Charles Boettcher of Denver, Alexander Berger of Maryton, Va., Frederick H. Prince of Boston and William W. Jones of Denver. The executive committee is now made up of Gerald Hughes, chairman, William R. Freeman, Lawrence C. Phipps, Jr., E. N. Durham and E. W. Mason.

GEORGIA & FLORIDA.—*Receivers' Certificates.*—The receivers have applied to the Interstate Commerce Commission for authority to issue $500,000 of 2-year 7 per cent receivers' certificates of indebtedness.

INTERNATIONAL-GREAT NORTHERN.—*Annual Report.*—The 1929 annual report of this company shows net deficit after interest and other charges of $424,375, as compared with net income in 1928 of $10,181. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average mileage operated	1,159.50	1,159.50	.....
RAILWAY OPERATING REVENUES	18,244,984	18,855,805	— 610,821
Maintenance of way	2,854,835	2,871,501	— 16,666
Maintenance of equipment	2,947,439	3,211,775	— 264,336
Transportation	7,089,750	7,455,138	— 365,388
TOTAL OPERATING EXPENSES	14,249,272	14,714,453	— 465,181
Operating ratio	78.10	78.04	+ 0.06
NET REVENUE FROM OPERATIONS	3,995,712	4,141,352	— 145,640
Railway tax accruals	512,080	497,089	+ 14,992
Railway operating income	3,473,715	3,632,212	— 158,497
Hire of freight cars—Dr.	957,952	793,784	+ 164,168
Joint facility rents	100,551	74,392	+ 26,159
NET RAILWAY OPERATING INCOME	2,266,517	2,626,723	— 360,206
Non-operating income	117,891	145,244	— 27,353
GROSS INCOME	2,384,408	2,771,967	— 387,559
Interest on funded debt	2,789,447	2,745,461	+ 43,985
TOTAL DEDUCTIONS FROM GROSS INCOME	2,808,783	2,761,787	+ 46,997
NET INCOME	* 424,375	10,181	— 434,556

* Deficit.

KAHULUI. — *Stock.* — This company, which operates a line on the island of Maui, Hawaii, has applied to the Interstate Commerce Commission for authority to issue $600,000 of additional common stock as a stock dividend, thereby capitalizing a portion of its surplus.

MINNEAPOLIS & ST. LOUIS.—*Receivers' Certificates.* — The Interstate Commerce Commission has authorized this company to renew or extend $250,000,000 of receivers' certificates for a period of six months at a rate of interest not to exceed 8 per cent, to meet a similar amount of such certificates maturing.

MISSOURI PACIFIC.—*Van Sweringen Directors Authorized To Serve on Subsidiary Companies.*—The Interstate Commerce Commission has approved the applications filed by O. P. Van Sweringen and other directors representing the Van Sweringen interests for authority to serve as directors of subsidiary and affiliated companies. The applications stated that they were elected directors of the Missouri Pacific on May 13 and that they had previously resigned all other positions as officers or directors of railroads. Mr. Van Sweringen had been chairman of the Chesapeake & Ohio and Pere Marquette.

NEW YORK CENTRAL.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of $3,945,000 of 4½ per cent equipment trust certificates, to be sold at not less than 99.71 and accrued dividends.

OREGON-WASHINGTON. — *Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Homestead to Robinette, Ore., 24.79 miles.

OREGON-WASHINGTON. — *Abandonment.*—Examiner M. S. Jameson of the Interstate Commerce Commission has recommended in a proposed report that the commission approve the abandonment of the Ilwaco branch, from Megler to Nahcotta, Wash., 28.1 miles.

PENNSYLVANIA. — *Stock.* — The Interstate Commerce Commission has authorized this company to issue $18,000,000 of capital stock—par value $50 a share. The stock is to be offered at par to officers and employees of the railroad and its subsidiaries who have been in service for a minimum of six months. Payment for the stock is to be made in monthly installments deducted from wages at the rate of $2, $5 or $10 a share per month.

PENNSYLVANIA.—*Stock of the St. Louis Connecting.*—The Interstate Commerce Commission has authorized the Pennsylvania to sell $100,000 of common stock of the St. Louis Connecting to the Pittsburgh, Cincinnati, Chicago & St. Louis. The property of the connecting line was provided as a new location for a section of the main line of the P. C. C. & St. L.

READING.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Trenton-Princeton Traction Company, which has a line of 12.56 miles between Trenton and Princeton, N. J., by purchasing stock and bonds for $200,000.

READING.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has authorized an issue of $7,080,000 of equipment trust certificates, to be sold at not less than 99.8375 and accrued dividends.

ST. LOUIS-SAN FRANCISCO.—*Annual Report.*—The 1929 annual report of this company shows net income after interest and other charges of $22,692,455, as compared with net income in 1928 of $24,636,429. Selected items from the income statement follow:

	1929	1928	Increase or decrease
Average mileage operated	5,819.80	5,673.11	+ 146.69
RAILWAY OPERATING REVENUES	89,109,286	85,782,818	+ 3,326,468
Maintenance of way	12,224,649	10,604,109	+ 1,620,539
Maintenance of equipment	13,473,716	12,922,659	+ 551,057
Transportation	29,259,175	28,942,184	+ 316,991
TOTAL OPERATING EXPENSES	62,847,958	59,783,801	+ 3,064,158
Operating ratio	70.53	69.69	+ .84
NET REVENUE FROM OPERATIONS	26,261,328	25,999,017	+ 262,311
Railway tax accruals	5,222,248	5,212,202	+ 10,046
Hire of equipment—Net	156,952	342,136	— 185,183
Joint facility rents—Net	155,126	148,217	+ 6,909
NET RAILWAY OPERATING INCOME	21,028,240	20,969,445	+ 58,795
Non-operating income	1,897,127	3,778,629	— 1,881,501
GROSS INCOME	22,925,368	24,748,074	— 1,822,706
TOTAL DEDUCTIONS FROM GROSS INCOME	232,913	111,645	+ 121,268
NET INCOME	22,692,455	24,636,429	— 1,943,974

ST. LOUIS-SAN FRANCISCO.—*New Director.*—Everett G. Frank, vice-president of the United States & International Securities Corp., an investment trust operating under the auspices of Dillon, Read & Co., has been elected a director of the St. Louis-San Francisco.

SEABOARD AIR LINE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $653,000 of 4 per cent refunding mortgage bonds to be pledged with the trustee of its first and consolidated mortgage, and $629,500 of first and consolidated mortgage bonds to be pledged as security for short-term notes.

SEABOARD AIR LINE.—*Equipment Trust.*—Freeman & Co. and E. Lowber Stokes & Co. are offering $3,510,000 of equip-

ment trust 5½ per cent, series DD, certificates of this company, maturing in installments from 1930 to 1945, at prices to yield from 4.25 per cent to 5.20 per cent.

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

Madison County	$132,500	1916
Birmingham Southern	3,785,000	1917
Duluth & Iron Range	28,610,000	1919
Louisville, Henderson & St. Louis	5,952,000	1918

Average Prices of Stocks and of Bonds

	May 27	Last week	Last year
Average price of 20 representative railway stocks.	127.95	127.60	130.41
Average price of 20 representative railway bonds..	93.53	93.76	90.36

Dividends Declared

Boston & Albany.—$2.50, quarterly, payable June 20 to holders of record May 31.

Chicago, Burlington & Quincy.—$5.00, semi-annually, payable June 25 to holders of record June 18.

Colorado & Southern.—First preferred, $2.00, semi-annually, payable June 30 to holders of record June 18.

Consolidated Railroads of Cuba.—Preferred, 1½ per cent, quarterly, payable July 1 to holders of record June 10.

Cuba Railroad.—Common, $1.20, payable June 27 to holders of record June 27. Preferred, $3.00, payable August 1 to holders of record July 15; Preferred, $3.00, payable February 2, 1931, to holders of record January 15, 1931.

Kansas, Oklahoma & Gulf.—Preferred A, 3 per cent; Preferred, B. & C. (No. 1), 3 per cent, both payable June 2 to holders of record May 20.

Midland Valley.—Preferred, $1.25, payable June 2 to holders of record May 24.

Missouri-Kansas-Texas.—Common Initial, $1.00, payable June 30 to holders of record June 5. Preferred A, $1.75, quarterly, payable September 30 to holders of record September 5; Preferred A, $1.75, quarterly, payable December 31 to holders of record December 5.

Mobile & Birmingham.—Preferred, 2 per cent, payable July 1 to holders of record June 2.

Reading Company.—2nd Preferred, $.50, quarterly, payable July 10 to holders of record June 19.

* * *

A Canadian National Electric Train On the Mount Royal Tunnel Route, Montreal, Que.

Railway Officers

Executive

H. H. Halverton of Houston, Tex., has been elected president of the newly organized Corpus Christi, San Angelo & Roswell. Other officers of the new company are **Edward Kennedy,** vice-president; **W. V. Kennedy,** secretary, and **J. M. Wilson,** treasurer, all of Houston.

H. B. Tooker, traffic manager of the Bingham & Garfield, the Nevada Northern and the Roy & Gila Valley, has been appointed traffic director of the Bingham & Garfield and vice-president of the Nevada Northern and the Roy & Gila Valley, with headquarters as before at San Francisco, Cal.

O. P. Van Sweringen was elected chairman of the board of the Missouri Pacific at a meeting of the directors at Cleveland, Ohio, on May 26, succeeding **William H. Williams.** All other executive officers were re-elected. Mr. Van Sweringen, L. W. Baldwin, G. A. Tomlinson, Alva Bradley, D. S. Barrett, Jr., John Sherwin, Jr., and Leonard P. Ayres were elected members of the executive committee.

George Doswell Brooke, whose promotion to vice-president and general manager of the Chesapeake & Ohio, with headquarters at Richmond, Va.,

G. D. Brooke

was announced in the *Railway Age* of May 17, was born on September 15, 1878, at Sutherlin, Va. He was graduated from the Virginia Military Institute in 1900, and commenced his railway career in July, 1902, with the Baltimore & Ohio, as a rodman. From August to December, 1902, he was a levelman and from December, 1902, to May, 1904, he served as transitman. On the latter date he was appointed field engineer, which position he held until November of the same year. He was then appointed assistant engineer, and served in this capacity successively at Baltimore and Cumberland, Md., and at Morgantown, W. Va., until July, 1908, when he was appointed assistant division engineer at Pittsburgh, Pa. From July, 1909, to March, 1911, he was division engineer at Baltimore, and on the latter date he became assistant engineer in the operating department. He was promoted to assistant superintendent at Cumberland on February 1, 1912, and in September of that year he was advanced to the position of superintendent, serving in this capacity until May, 1918, at Winchester, Va., Chillicothe, Ohio, and Cumberland, Md., successively. From May to June, 1918, he was a special representative of the transportation department at Baltimore, Md. He entered the United States Railroad Administration in June, 1918, as supervisor in the operating division, Allegheny region, at Philadelphia, Pa., which position he held until March, 1919, when he resumed his connection with the Baltimore & Ohio as superintendent of transportation at Cincinnati, Ohio. From August, 1924, when he first entered the service of the Chesapeake & Ohio, to October, 1926, he served as assistant to vice-president of that road at Richmond, Va., and on the latter date he was appointed general manager, which position he has held until his recent appointment as vice-president and general manager.

Financial, Legal and Accounting

William R. Sievers, general auditor of the Chicago Great Western, with headquarters at Chicago, who was placed in charge of the accounting department of that road on May 15, has been in railway service for 32 years. He was born at Racine, Wis., on September 25, 1880, and graduated from the Omaha (Neb.)

William R. Sievers

high school in 1898. In June of the same year he obtained his first railway experience in the accounting department

of the Chicago, Burlington & Quincy at Omaha, entering the employ of the accounting department of the Great Northern at St. Paul, Minn., four years later. Mr. Sievers entered the service of the Great Western in the accounting department at St. Paul on December 1, 1908, being transferred to Chicago in September, 1909, when the general offices were moved from St. Paul. He was promoted to auditor of disbursements, with headquarters at Chicago, in September, 1920, and to general auditor on March 1, 1930.

Operating

Frank McElroy, superintendent of the Detroit division of the Michigan Central, with headquarters at Detroit, Mich., has been transferred to the Northern division, with headquarters at Bay City, Mich., following the abolishment of the Detroit division on May 31. The jurisdiction of the Northern division has been extended to include the Detroit-Saginaw branch, the Denmark-Bay City branch and the Caro branch, while the jurisdiction of the Middle division has been extended to include the Detroit division main line between Jackson Junction and Town Line. The jurisdiction of the Detroit yards and Toledo division has been extended to include the Detroit passenger yard and passenger station and the Detroit River tunnel.

Karl W. Fischer, who has been promoted to superintendent of the Creston division of the Chicago, Burlington & Quincy, with headquarters at Creston, Iowa, has been connected with that road for 19 years. He was born at Quincy, Ill., on June 18, 1883, and entered railway service in June, 1909, on the Burlington. From June, 1911, to October, 1918, he served successively as tourist agent, depot passenger agent and city ticket agent at St. Louis, Mo., and as loading inspector and special inspector on the staff of the general manager at Omaha, Neb. He was then promoted to assistant trainmaster at Billings, Mont., where he remained until June, 1919, when he was transferred to Casper, Wyo. In October of the same year Mr. Fischer was promoted to trainmaster at Lincoln, Neb., then serving for six years as a transportation inspector on the staff of the superintendent of transportation at Chicago and the general manager at Omaha. He was appointed assistant superintendent of the LaCrosse division at Daytons Bluff (St. Paul), Minn., in July, 1925, his promotion to superintendent of the Creston division becoming effective on May 16.

Traffic

A. W. Bower, division freight and passenger agent on the Chicago & North Western at Madison, Wis., has been promoted to assistant general passenger agent, with headquarters at Chicago, effective June 1.

R. G. Owen has been appointed assistant to the freight traffic manager of the Union Pacific System, with headquarters at San Francisco, Cal. Mr. Owen's duties will consist of the solicitation of perishable freight traffic.

J. W. Flannery, who has been appointed assistant traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., in charge of off-line solicitation throughout the United States, was born in 1889 and entered railway service at the age of 13 years as a messenger in the offices of the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati. In 1910 he became a contracting freight agent for the Big

J. W. Flannery

Four at Cincinnati and in the following year was appointed general agent for the Georgia Southern & Florida (now part of the Southern). During federal control of the railroads Mr. Flannery was in charge of traffic and transportation for the United States Army in the territory from the Ohio river to the Gulf of Mexico, and also served as a traffic assistant to the district director of railroads at Cincinnati. He was traffic manager of the Kroger Grocery & Baking Company from 1920 until his appointment as assistant traffic manager of the Frisco on June 1.

Engineering, Maintenance of Way and Signaling

D. R. Young has been appointed division engineer of the Delaware, Lackawanna & Western, with headquarters at Buffalo, N. Y., succeeding **F. L. Wheaton,** retired.

W. R. Bennett, who has been appointed chief engineer, maintenance of way, of the Wabash with headquarters at St. Louis, Mo., has been in railway service for nearly 21 years. He was born on June 28, 1888, at Peoria, Ill., and attended Bradley Polytechnic Institute, receiving his first railway experience as a transitman on the Chicago & Alton in July, 1908. From May, 1909, to February, 1913, Mr. Bennett was advanced successively on the Peoria & Pekin Union as transitman, inspector of construction on the Illinois River bridge and assistant engineer on bridge construction. He then served for a year and a half as assistant city engineer of Peoria, Ill., returning to railway service in November, 1914, as a draftsman on the Atchison, Topeka & Santa Fe at Topeka, Kan. He was appointed transitman in March, 1915, draftsman on federal valuation in November, 1915, and from April, 1916, to October, 1918, he occupied the position of construction inspector, transitman, engineer accountant and assistant chief clerk to the superintendent and valuation accountant on the Santa Fe. Mr. Bennett then became assistant division engineer of the Detroit division of the Wabash. In November, 1919, he was appointed track supervisor at Montpelier, Ohio, where he remained until April, 1921, when he was transferred to the Chicago Terminal division. In October of the latter year he became assistant engineer at St. Louis, then being transferred to Moberly, Mo., in

W. R. Bennett

September, 1922, and promoted to division engineer at Springfield, Ill., in October, 1923. Three years later he was promoted to assistant chief engineer, with headquarters at St. Louis, and in March, 1929, he was appointed assistant to the president at the same point. His promotion to chief engineer, maintenance of way, of the Wabash became effective on May 16.

Mechanical

E. M. Smith has been appointed mechanical superintendent of the Louisiana & Arkansas, with headquarters at Minden, La., succeeding **J. E. Tierney,** resigned.

Edwin R. Battley, superintendent of motive power of the Montreal district of the Canadian National, with headquarters at Montreal, Que., has been promoted to assistant general superintendent of motive power of the Central region, with headquarters at Toronto, Ont.